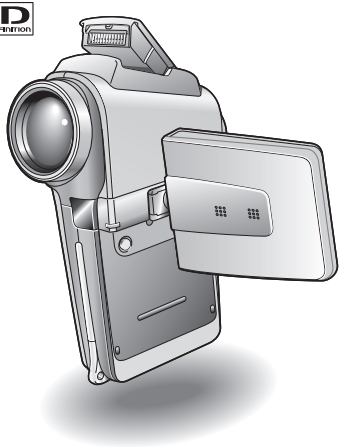
SANYO

INSTRUCTION MANUAL

VPC-HD1AEX
VPC-HD1A

Digital Movie Camera

Xacti HD HIGH DEFINITION



Important note

This manual explains how to safely operate the VPC-HD1AEX and VPC-HD1A.
Any information regarding only one of these products will be labeled as such.

Please read these instructions carefully before using the camera.
Make sure to read and understand the separate booklet “SAFETY MANUAL”.
Keep this manual in a safe place for later reference.

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Warning
TO PREVENT THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE

FOR AMERICAN USERS

The following advisory is included in accordance with the laws of the State of California (USA):
WARNING:
This product contains chemicals, including lead, known to the State of California to cause cancer, birth defects or other reproductive harm. **Wash hands after handling.**

- This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
- Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Declaration of Conformity

Model number: VPC-HD1A
Trade Name: SANYO
Responsible party: SANYO FISHER COMPANY
Address: 21605 Plummer Street, Chatsworth, California 91311
Telephone No.: (818) 998-7322
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

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FOR CANADIAN USERS

- This Class B digital apparatus complies with Canadian ICES-003.

FOR EU USERS

Note:

- This symbol mark and recycle system apply only to EU countries and do not apply to countries in other areas of the world.

Your SANYO product is designed and manufactured with high quality materials and components which can be recycled and reused.
This symbol means that electrical and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.
Please dispose of this equipment at your local community waste collection/recycling centre.
In the European Union there are separate collection systems for used electrical and electronic products.
Please help us to conserve the environment we live in!

Symbols used in this manual

HINT Points giving some extended instructions or special points to pay attention to.
CAUTION Points that require special attention.
(page xx) Refer to the page indicated for detailed information.

You may find the answers to questions or problems concerning camera operation in the sections “COMMONLY ASKED QUESTIONS” (page 165) and “TROUBLESHOOTING” (page 173).

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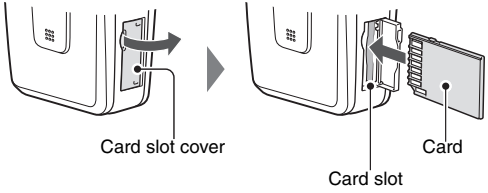
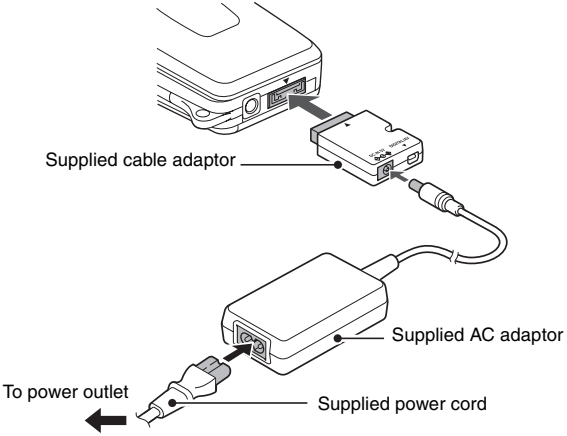
SHOOT, PLAY BACK AND SAVE

Preparing the camera

1 **Insert the card.**



2 **Connect the cable adaptor to the camera, and connect the AC adaptor.**



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■Video clip recording

1 **Open the monitor unit, and press the ON/OFF button for at least 1 second to turn the camera on.**

2 **Set the main switch to REC.**

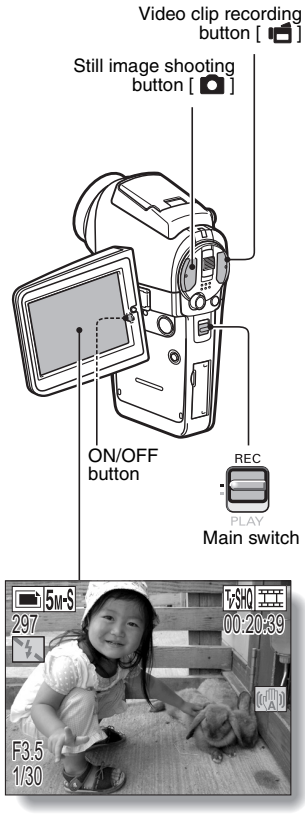
3 **Press the video clip recording button [ ].**
- Recording begins.
- To stop recording, press the video clip recording button again.

■Still image photography

1 **Open the monitor unit, and press the ON/OFF button for at least 1 second to turn the camera on.**

2 **Set the main switch to REC.**

3 **Press the still image shooting button [ ].**
- The image is captured.



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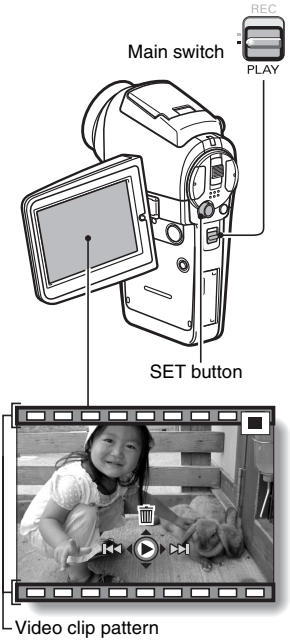
Playback

■Video clip playback

1 **Set the main switch to PLAY.**
- The display switches to the Playback Screen.
- Toggle the SET button to the left or right to display the video clip you wish to play back.
- Video clips are indicated by a video clip pattern along the top and bottom of the screen.

2 **Press the SET button.**
- Playback of the selected video clip begins.
- When the main switch is moved to REC, the display changes to the Shooting Screen.



<Example: After recording a video clip>

■Still image playback

1 **Set the main switch to PLAY.**
- The display switches to the Playback Screen.
- To view other images, toggle the SET button to the left or right.
- When the main switch is moved to REC, the display changes to the Shooting Screen.

When you are finished using the camera...

Press the ON/OFF button for at least 1 second to turn the camera off.

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Burn your recorded video clips onto a DVD (Windows XP)

Using the supplied CD-ROM (SANYO Software Pack), you can import the captured images to your computer and store them on a DVD. Detailed information about the SANYO Software Pack can be found on page 4 in the SANYO Software Pack INSTRUCTION MANUAL.

Install application programs

1 **Set the supplied CD-ROM (SANYO Software Pack) in your computer's CD-ROM drive.**
- The installation window opens.

2 **Click on the application program you wish to install.**
- Install the application program with which you can import images to a computer (Photo Explorer).
- Install the application program with which you can create DVDs (MovieFactory).
- After clicking on an application program, follow the instructions shown on the monitor to install the program.
- When the installation is complete, the product registration window will appear, but click on the Exit button to close the window.

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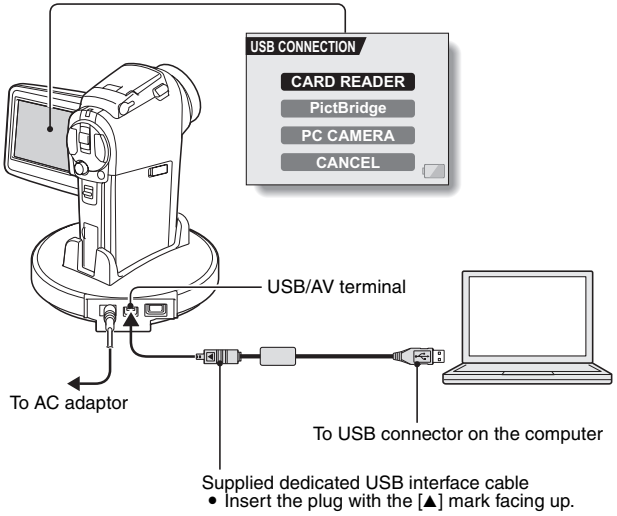
3 **In the installation window, click on [Finish] and remove the CD-ROM from the computer's CD-ROM drive.**

<About the Kodak online service>

- When the installation window closes, a dialog box to connect to the website introducing Kodak's online service appears. Check the [No thanks!] option button, and then click on the [OK] button.

Connect your camera to a computer

Use the supplied dedicated USB interface cable to connect your camera to a computer (page 7 in the SANYO Software Pack INSTRUCTION MANUAL).



Copy a video clip to your computer

Run PhotoExplorer, set the location of the camera's data as the copy source, and copy the video clip(s) to your computer (page 17 in the SANYO Software Pack INSTRUCTION MANUAL).

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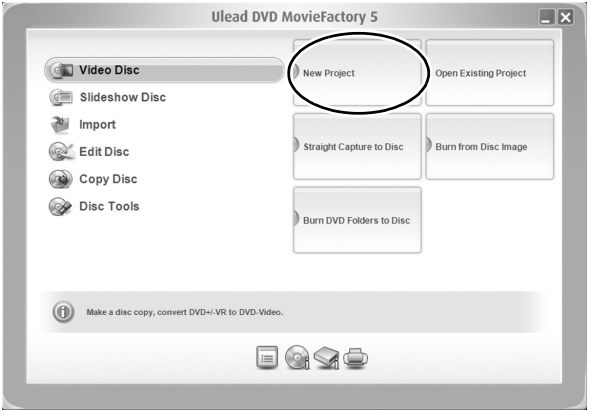
Burn video clips onto a DVD

1 **Click on your desktop's [Ulead DVD MovieFactory 5 Launcher] icon to run MovieFactory.**

- The MovieFactory launcher appears.
- If the product registration screen appears, select [Register Later].



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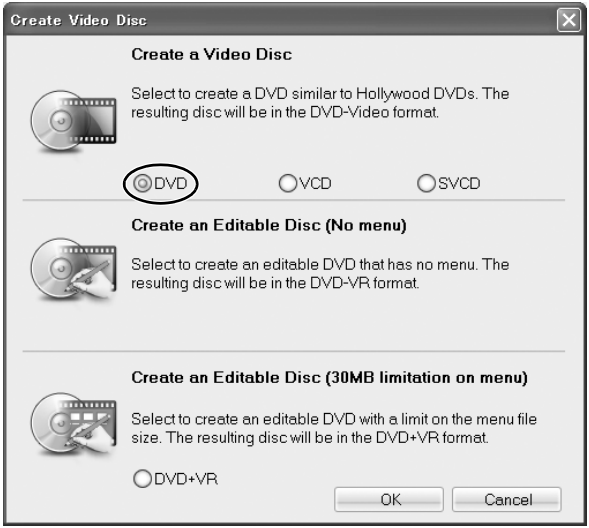
2 **Click on [New Project]**
- The [Create Video Disc] window opens.


Create Video Disc
Create a Video Disc
Select to create a DVD similar to Hollywood DVDs. The resulting disc will be in the DVD-Video format.
DVD
VCD
SVCD
Create an Editable Disc (No menu)
Select to create an editable DVD that has no menu. The resulting disc will be in the DVD-VR format.
Create an Editable Disc (30MB limitation on menu)
Select to create an editable DVD with a limit on the menu file size. The resulting disc will be in the DVD+VR format.
DVD+VR
OK
Cancel

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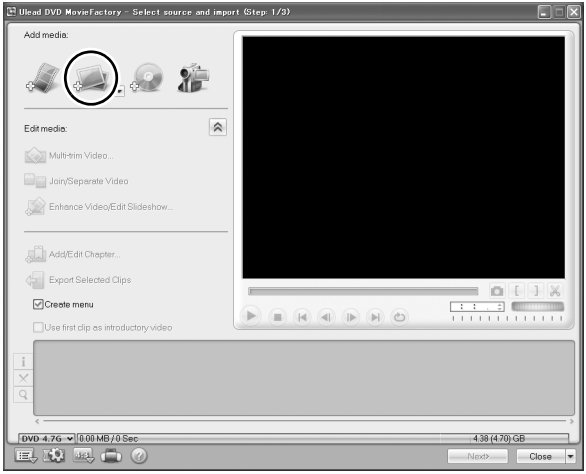
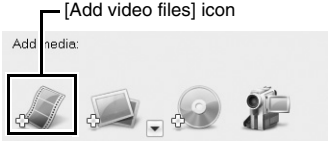
3 **Set the [DVD] option to ON, and click on the [OK] button.**

- The [Add/Edit Media] window opens.



4 **Click on the [Add video files] icon.**



- The [Open Video File] dialog box opens.
- Open the folder that contains the video files (My Documents\SANYO_PEX\datefolder).

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5 **Select the video clip files to burn onto the DVD.**

- Select the files you wish to burn onto the DVD by clicking on them.
- To select multiple files, click on the individual files while holding down the [Ctrl] button. If you select one file, hold down the [Shift] button and click on another file in the list, all the files in between are also selected.

6 **Click on the [Open] button.**

<When one video clip is selected>

- The [Open Video File] dialog box closes.

<When multiple video clips are selected>

- The [Rearrange clip order] dialog box opens.
- You can drag the clip file names to change the video clip playback order.
- Click on the [OK] button, and the [Rearrange clip order] dialog box closes.

- The file selected in step **5** appears in the [Add/Edit Media] window.

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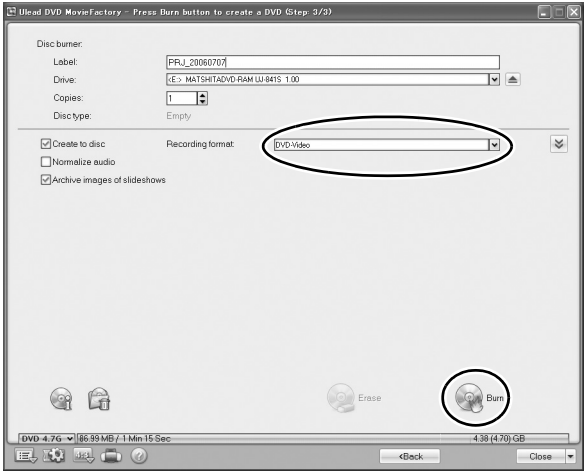
7 **Click on the [Next] button.**
- The window to edit the title page of your DVD appears.

8 **Set your desired title page, and click on the [Next] button.**
- The window to confirm the title page appears.

9 **Click on the [Next] button.**
- The window to export the video files to the DVD appears.



10 **Set the [Recording format] to [DVD-Video].**

11 **Set a blank DVD in your computer's disc burner, and click on the [Burn] icon.**
- A confirmation dialog box appears.

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12 **Click on the [OK] button.**
- Disc writing begins.
- After burning the disc, a dialog box shows that burning is complete.

13 **Click on the [OK] button.**
- The DVD drive tray opens for you to remove the disc.

<About saving projects>
- After burning a disc, a save project dialog box appears. If you wish to use the settings for the current project in subsequent projects, you should save them. If you will not use the settings in subsequent projects, it is not necessary to save them.

14 **Click on the [OK] button.**
- You are returned to the MovieFactory launcher.

15 **Click on the exit MovieFactory button [×].**
- The DVD is completed.
- MovieFactory is exited.

How was that? The convenient accessories not only let you immediately view images captured with the camera, but you can also upload images to your computer and create your original DVDs. Read the following explanations to find out how you can fully enjoy your camera's digital movie feature.

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QUICK SEARCH BY OPERATION

Your camera has an abundance of convenient features and functions. From creating precisely the photo you want, to viewing images using various techniques, you can locate the exact operation for your purposes in the following table.

<table>
<tr><th colspan="3">Shooting/recording</th></tr>
<tr><th>Basic operation</th><th>Convenient functions</th><th>Additional functions</th></tr>
<tr><td>Getting started shooting/recording
• “Recording video clips” on page 42
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QUICK SEARCH BY OPERATION

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<tr><th colspan="3">Shooting/recording</th></tr>
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• “SCENE SELECT” (sports mode) on page 73</td></tr>
<tr><td colspan="3">Shoot in dark conditions
• “EXPOSURE CORRECTION” on page 63
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• “SCENE SELECT” (portrait mode/night view portrait mode) on page 73
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<tr><td colspan="3">Take a self-photo
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• “EXPOSURE CORRECTION” on page 63
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For a more precise exposure setting
• “EXPOSURE SETTING” (manual exposure control) on page 74</td></tr>
<tr><td>Change the color of the images
• “FILTERS” (monochrome filter/sepia filter) on page 76</td><td>Make white appear natural
• “WHITE BALANCE” on page 84</td></tr>
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Playback		
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• “Viewing still images” on page 48	**Search for image/ audio data** • “9-image display playback” on page 49 **Magnify an image** • “Magnifying (zooming in) the image” on page 50	**Change the angle of view** • “ROTATE IMAGE” on page 99
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Delete a part of a video clip and join video clips • “EDITING VIDEO CLIPS” on page 102		
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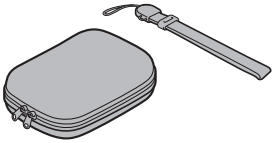
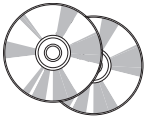
CHECKING THE INCLUDED ACCESSORIES

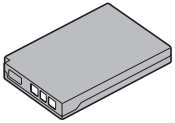
- **Handstrap and camera case: 1 set**



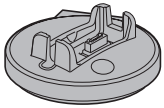
- **SANYO Software Pack (CD-ROM): 2**



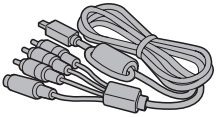
- **Li-ion battery pack: 1**



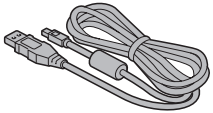
- **Docking station: 1**



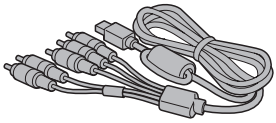
- **Dedicated S-AV interface cable: 1**



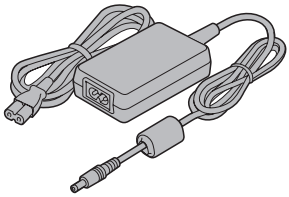
- **Dedicated USB interface cable: 1**



- **Dedicated component cable: 1**



- **AC adaptor and power cord: 1**



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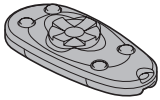
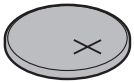
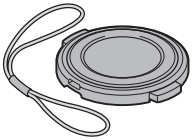
- **Remote control unit: 1**



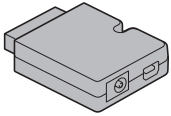
- **Lithium battery (CR2025) for remote control unit: 1**



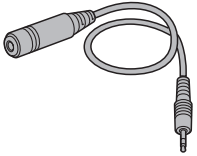
- **Lens cap and strap: 1**



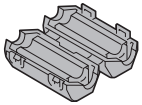
- **Cable adaptor: 1**



- **Microphone connection cable: 1**



- **Core: 1**



- **“SAFETY MANUAL” (safety precautions booklet) Please read this booklet carefully before using the camera.**

- **Quick Guide**

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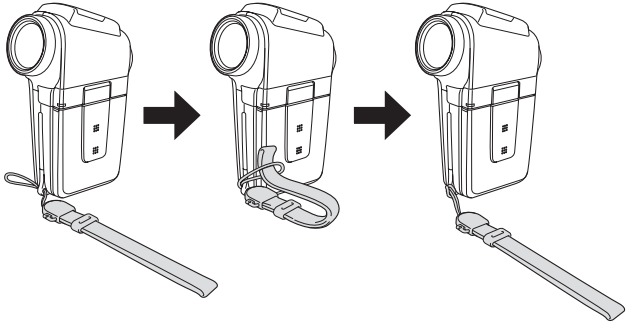
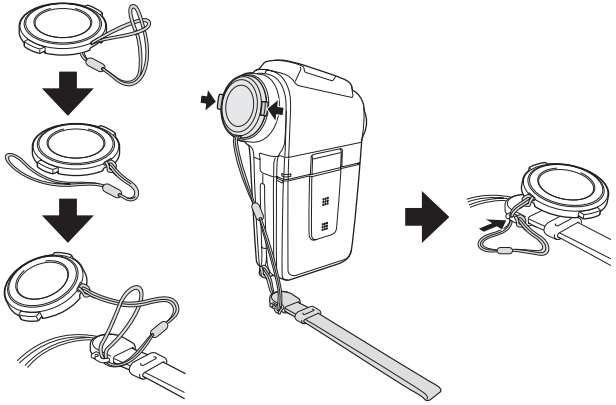
CHECKING THE INCLUDED ACCESSORIES

How to use the accessories

■ **Handstrap**



■ **Lens cap**



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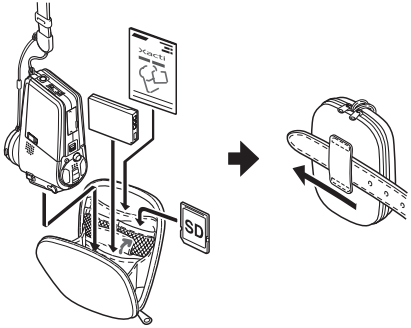
■ **Camera case**



Media cards that can be used with this camera

The type of card that can be inserted into and used with this camera is:

- SD Memory Card

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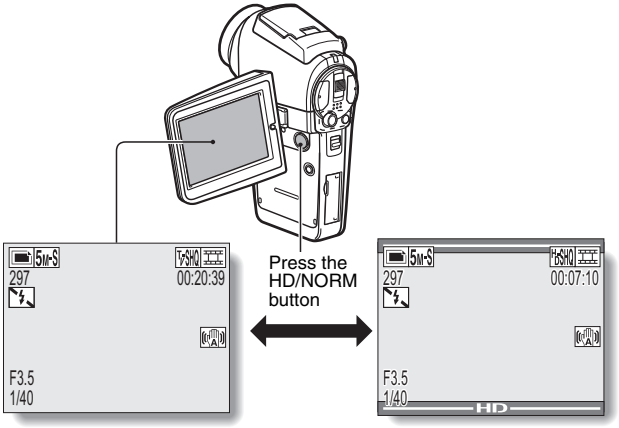
GETTING THE MOST OUT OF YOUR CAMERA

Your camera is a digital movie camera with the ability to shoot and play back video clips with high image quality. Video clips can be recorded at a 60 fps frame rate with a 16:9 aspect ratio, and in addition, video clips recorded at 30 fps can be played back at 60 fps. Of course, your camera captures high-quality still images, as you would expect, and you can even capture still images while recording a video clip.
The docking station makes it simple to connect other devices to your camera, providing you with the double advantages of both high functionality and ease of use.

Wide-screen recording and playback (HD mode) (page 54)

In addition to the standard recording mode (normal mode, 4:3 aspect ratio), your camera can both record and play back video clips in the wide-screen mode with a 16:9 aspect ratio (HD mode).



<Normal Mode Shooting Screen>

<HD Mode Shooting Screen>

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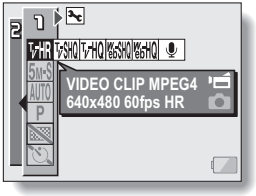
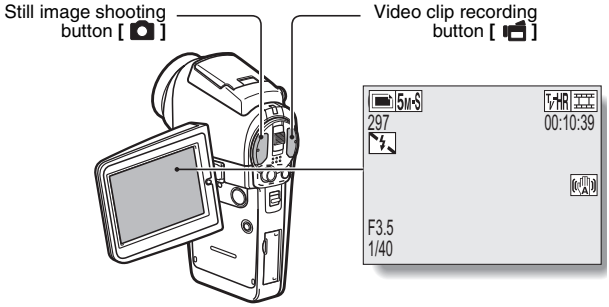
Very high image quality with 60 fps shooting (page 71)

Compared to the standard 30 fps TV images, the movement of even fast-moving subjects will appear smooth and even in the video clips you record at 60 fps.



Capture still shots while recording a video clip (page 51)

Suppose that while you're recording a video clip, there's a scene you'd like to keep as a still photo. Your camera makes it possible to record the still photo without interrupting the video clip recording.



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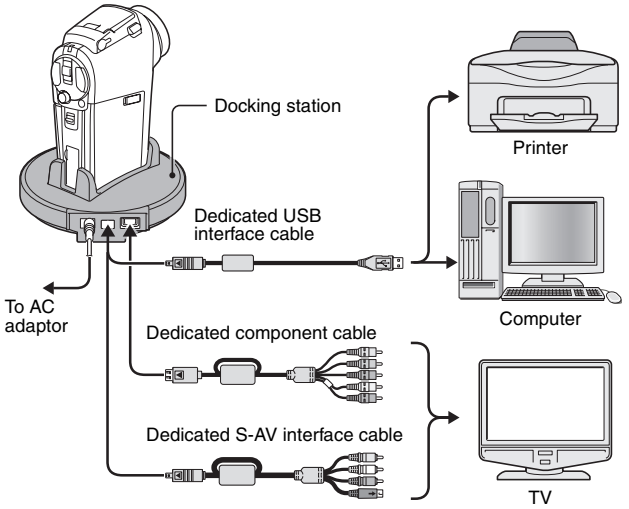
Docking station for easy connection

The docking station simplifies those complicated connections to your TV or computer. Just set the camera in the docking station, and you can view your photos on your TV or computer right away.



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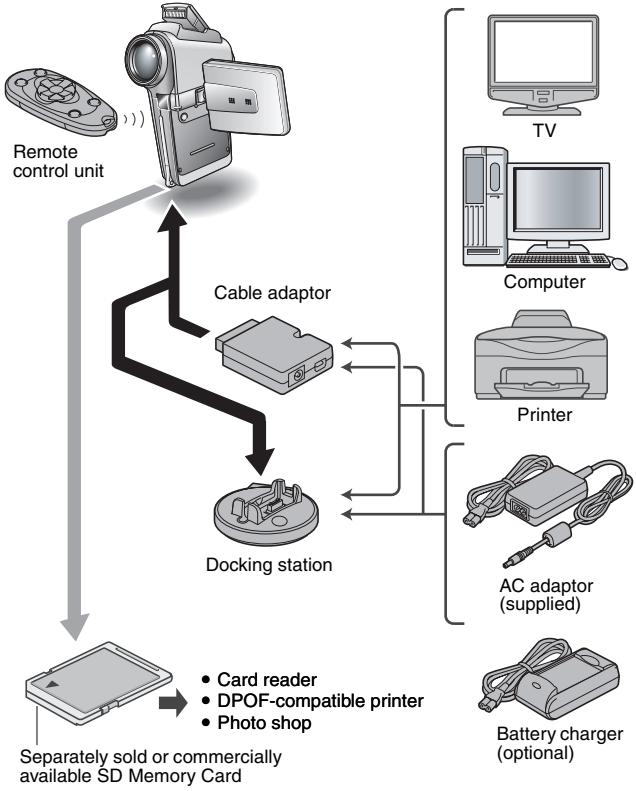
SYSTEM MAP

You can connect the camera to various devices to expand its capabilities.



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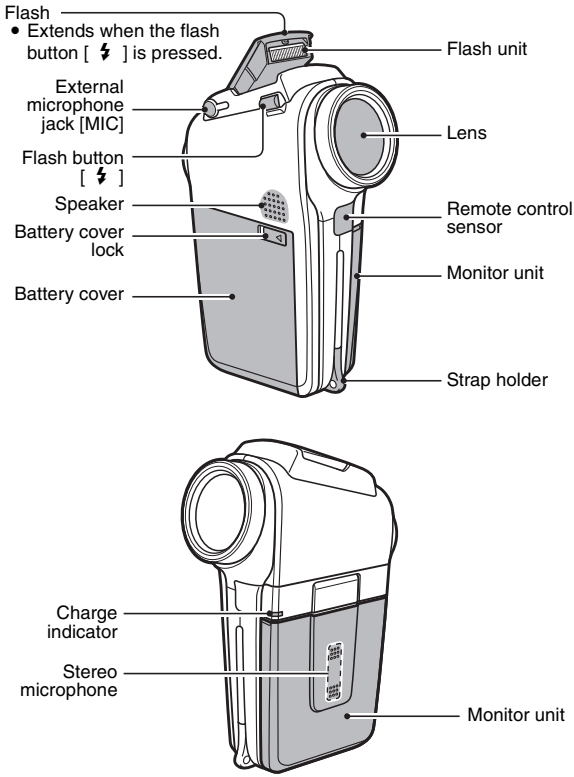
PARTS NAMES

Camera

Front



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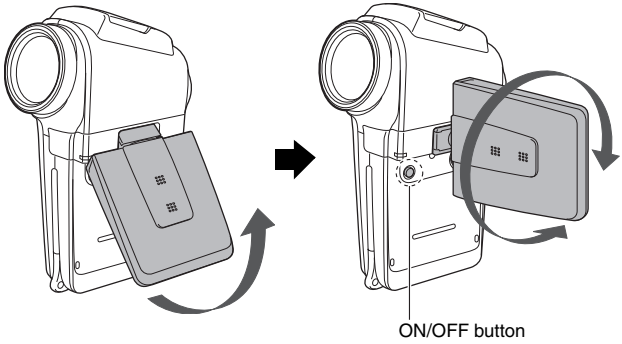
<To open the monitor unit>



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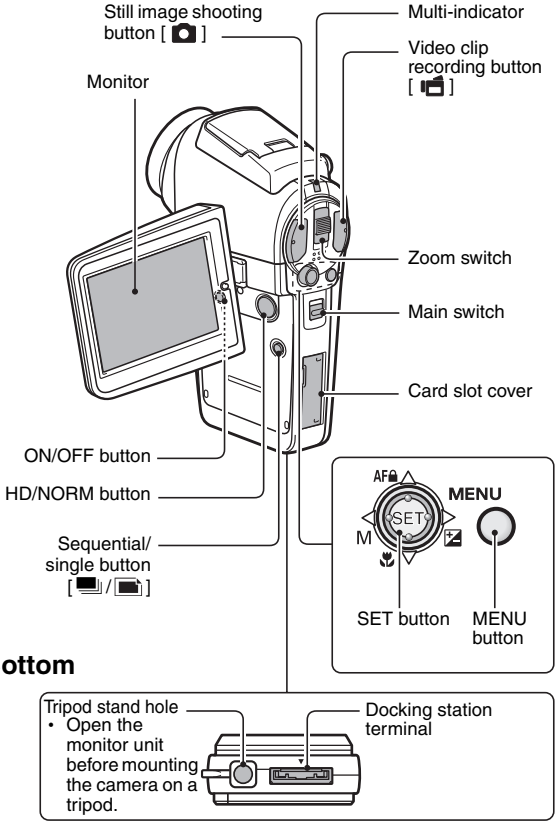
PARTS NAMES

Rear



Bottom

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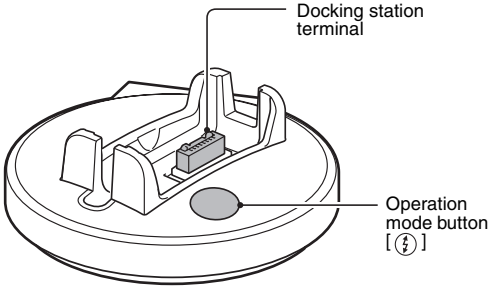
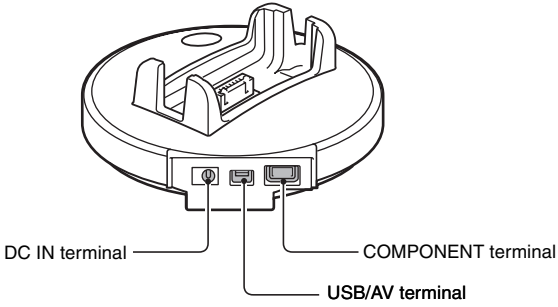
Docking station

Front



Rear



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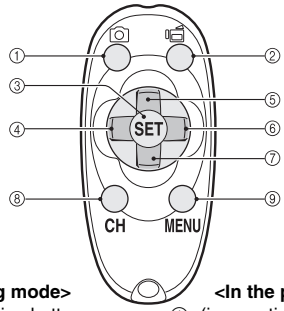
PARTS NAMES

Remote control unit



<In the shooting mode>

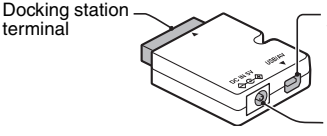
① Still image shooting button
② Video clip recording button
③ SET button
④ Works the same as toggling SET button to the left
⑤ Works the same as toggling SET button up or pushing zoom switch toward the [T] ([ ]) side
⑥ Works the same as toggling SET button to the right
⑦ Works the same as toggling SET button down or pushing zoom switch toward the [W] ([ ]) side
⑧ CH button
⑨ MENU button

<In the playback mode>

① (inoperative)
② (inoperative)
③ SET button
④ Works the same as toggling SET button to the left
⑤ Works the same as toggling SET button up
⑥ Works the same as toggling SET button to the right
⑦ Works the same as toggling SET button down
⑧ CH button
⑨ MENU button

* Operation shortcuts are not available from the remote control unit.

Cable adaptor


Docking station terminal
USB/AV terminal
* The dedicated component cable (supplied) cannot be connected to the USB/AV terminal.
DC IN terminal

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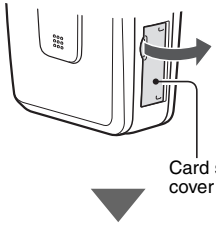
INSTALLING THE CARD

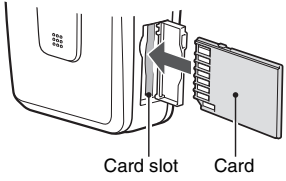
Be sure to format a newly purchased card or one that was used in another device before using it in your camera (page 144). If an unformatted card is used, the card itself may become unusable.

1 **Open the card slot cover, and insert the card in the card slot.**



2 **Insert the card all the way in.**
- Firmly insert the card until it clicks into place.

3 **Close the card slot cover.**



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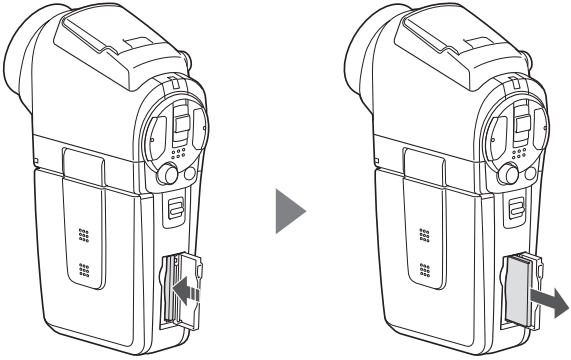
INSTALLING THE CARD

<To remove the card...>

- To remove the card, press it down, and then release. The card will protrude slightly, and you can then pull it out.



CAUTION

Do not attempt to forcibly remove the card.

- Doing so may damage the card or the stored data.

If the multi-indicator is flashing red...

- Never remove the card when the multi-indicator is flashing red, as doing so may result in loss of data stored in the card.

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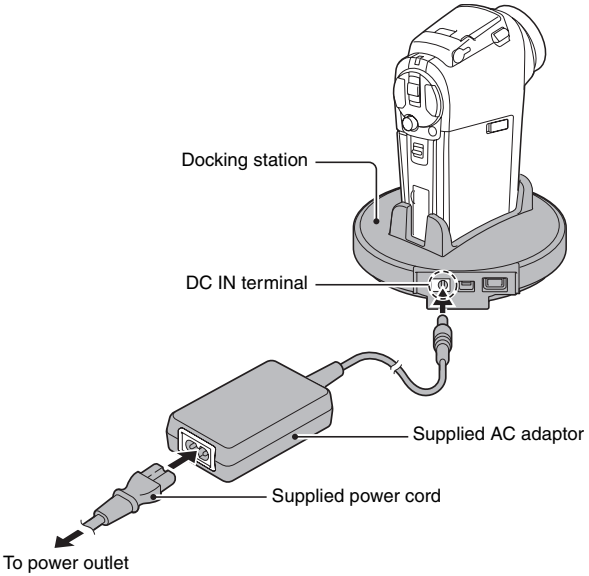
PREPARING THE DOCKING STATION

The supplied docking station is used to connect your camera to a computer, printer or TV, as well as to charge the battery pack installed in the camera.

1 **Connect the docking station to a power outlet.**

- Use the supplied AC adaptor and power cord.



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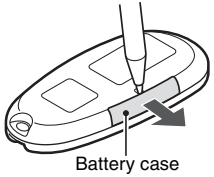
PREPARING THE REMOTE CONTROL UNIT

The remote control unit can be used to take pictures and play them back with the camera.

Insert the battery

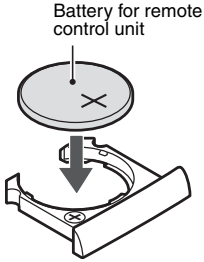
Install the supplied battery (CR2025) in the remote control unit.

1 **Pull out the battery case.**

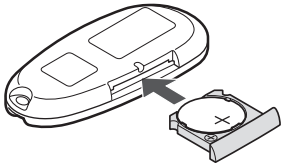


2 **Insert the supplied battery.**

- Wipe the battery with a soft, dry cloth before inserting it.
- Insert the battery with the (+) mark facing upward.



3 **Reinsert the battery case.**



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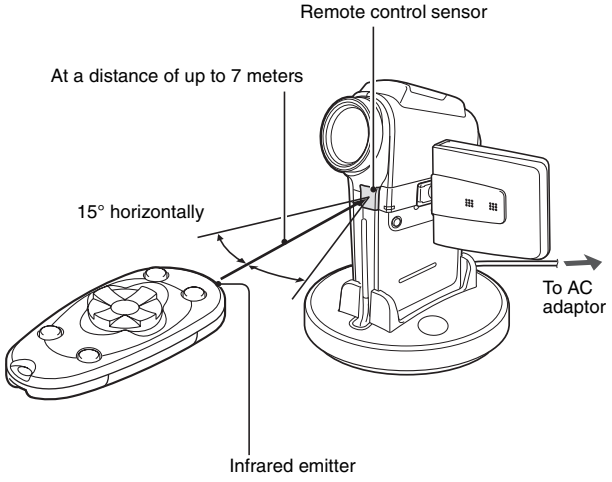
How to use the remote control unit

The remote control unit can be used at an angle that is displaced 15 degrees horizontally from the remote control sensor on the front of the camera, at a distance of up to 7 meters. When operating the remote control unit, remove any object that may obstruct the path between it and the remote control sensor.



CAUTION

- If the remote control unit is operated in sunlight or under inverter lighting, the remote control receiving range may become shorter. This is a characteristic of the infrared remote control unit and is not a defect. To avoid this malfunction when operating the remote control unit, take care to shield the remote control sensor from strong light.

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PREPARING THE REMOTE CONTROL UNIT

Changing the remote control code

The remote control unit will also work with other Sanyo cameras that can be operated by infrared remote control. When more than one camera is present, it is recommended to change the remote control code to ensure that only the intended camera operates when the remote control unit is used. The remote control code is set to "RC CODE 1" at the time of purchase.

<Changing the remote control code from "RC CODE 1" to "RC CODE 2">

1 **Aim the infrared emitter at the remote control sensor on the docking station.**

2 **Hold down the CH button and press the [▼] button for about 3 seconds.**

3 **Press a button on the remote control unit and check that the camera is receiving correctly.**

- The remote control codes are retained even if the batteries in the remote control unit or camera are replaced.
- If the remote control codes for the remote control unit and the camera and do not match, the remote control unit cannot be used to operate the camera.

<Resetting the remote control code to "RC CODE 1">

1 **Aim the infrared emitter at the remote control sensor on the docking station.**

2 **Hold down the CH button and press the [▲] button for about 3 seconds.**

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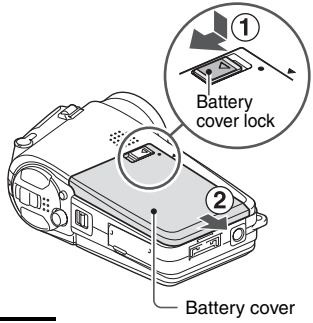
PREPARING THE POWER

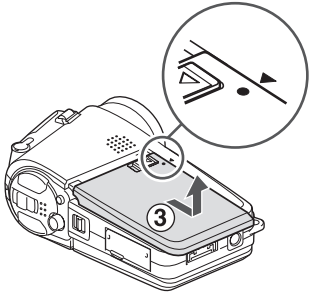
Please charge the supplied battery pack before using it. Power to the camera can also be supplied from a power outlet if the docking station or the cable adaptor is used.

Charging the battery pack

1 **While pressing the battery cover lock, slide it (①), and pull out the battery cover toward the bottom of the camera (②).**



2 **Open the battery cover (③).**
- The battery cover comes off.



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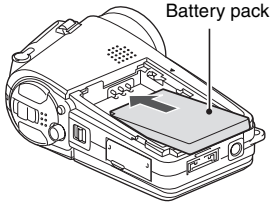
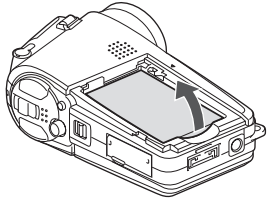
3 **Insert the battery pack.**
- Take care that it is positioned correctly.

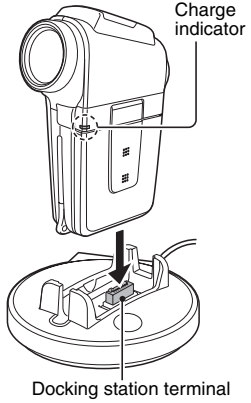


4 **Close the battery cover.**
<To remove the battery pack...>
- Raise the edge of the battery pack to remove it.



5 **Prepare the docking station (page 22).**

6 **Close the camera's monitor unit, and set the camera in the docking station.**
- Set the camera securely, making sure that the camera is correctly oriented in relation to the terminal contacts in the docking station.
- Charging begins when the camera is set in the docking station.
- During charging, the charge indicator is lit red. When charging is completed, the charge indicator turns off.
- If the charge indicator flashes red, it indicates that the battery pack is defective or the camera is not correctly set in the docking station. Reset the camera correctly in the docking station.
- The charging time is approx. 90 minutes.



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CAUTION

Using the camera when it is set in the docking station...

- You can photograph and view images while the camera is set in the docking station. The battery pack can be charged when the camera is in the playback mode, but not in the shooting mode.

Do not charge the battery pack battery pack immediately after the camera has been in continuous use for a long time

- The battery pack becomes hot when the camera is used continuously for a long time. If you attempt to charge the battery pack in this state, the charge indicator may flash red and it may not be possible to charge the battery pack. Wait until the battery pack has cooled down before attempting to charge it.

HINT

About the internal backup battery

- This camera's internal battery serves to maintain the date and time settings, as well as the shooting settings. The backup battery will be fully charged when the battery pack is kept in the camera continuously for about 2 days. In the fully charged state, the backup battery will maintain the camera settings for about 7 days.

When not using the camera for a long time, remove the battery pack.

- A small amount of power is still used even if the camera is turned off, and it is therefore recommended that the battery pack be removed from the camera if it is not going to be used for a long time. Note that when the battery pack is removed for a long period, the time and date settings may be cleared. Before using your camera again, be sure to confirm that the camera settings are correct.

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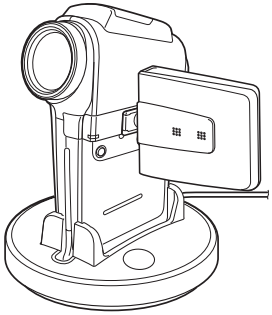
PREPARING THE POWER

When using a power outlet

Power to the camera can be supplied from a power outlet if the docking station or the cable adaptor is used.

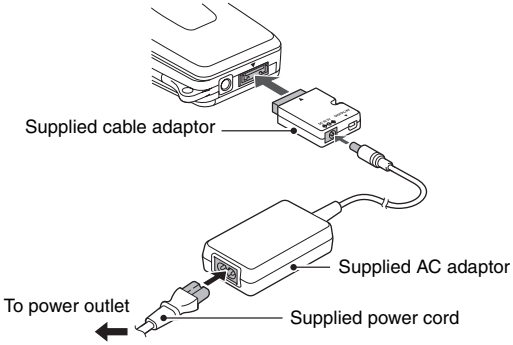
Using the docking station

Use the supplied power cord to connect the docking station to a power outlet, and set the camera in the docking station.



Using the cable adaptor

Connect the cable adaptor to the camera, and use the supplied power cord to connect the cable adaptor to a power outlet.



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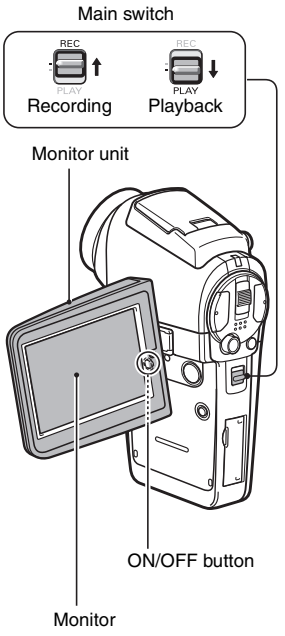
TURNING THE CAMERA ON AND OFF

Turning on the camera

1 **Set the main switch.**
To shoot pictures:
Set to REC
To play back images:
Set to PLAY

2 **Open the monitor unit.**

3 **Press the ON/OFF button for at least 1 second.**
- The camera turns on, and an image appears on the monitor.



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TURNING THE CAMERA ON AND OFF

Turning on the camera when the power save (sleep) function is active

In order to preserve battery pack power, the power save (sleep) function will automatically turn off the camera after one minute of no use during shooting, or five minutes of no use during playback (factory-preset setting).

- When the power save function is active, you can restore the power by any of the following methods:
  - **Move the main switch.**
  - **Press the ON/OFF button.**
  - **Press the still image shooting/video clip recording button.**
  - **Press the SET or MENU button.**
  - **Press the zoom switch.**
  - **Press the flash button [ϟ].**
  - **Press the HD/NORM button.**
  - **Press the sequential/single button [/].**
- After the power save function has been active for about 1 hour, the camera will switch to the standby mode. In this case, you can restore the power by pressing the ON/OFF button, or by closing and then opening the monitor unit.
- When the AC adaptor is connected, the power save function will become active about 10 minutes after the camera is turned on (factory-preset setting).
- The user can specify the time elapsed before the power save function is activated (page 139).
- When the camera is connected to a computer or printer, the power save function becomes active after about 12 hours.

Turning off the camera

1 **Press the ON/OFF button for at least 1 second.**
- The camera turns off.

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HINT

To immediately activate the power save function

- Press the ON/OFF button briefly to active the power save function.

About the standby mode

- To turn off the camera only briefly, you can close the monitor unit to put the camera in the standby mode. The standby mode uses almost no power. When the monitor unit is opened again, the camera turns on immediately and you are ready to shoot or view images without any delay.

If the date and time setting has been completed (page 35)...

- The current time is shown on the monitor when the camera is turned on.

CAUTION

If the icon appears...

- When a picture is taken, the date and time it was captured are recorded with it. If the date and time settings have not been completed (page 35), the date and time cannot be recorded with the captured images. For this reason, immediately after the camera is turned on, the “SET DATE AND TIME” reminder briefly appears, after which the icon is shown on the Shooting Screen. To have the date and time recorded with the images, please complete this setting before capturing images.

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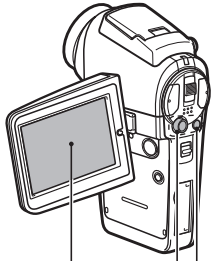
OPERATION BUTTONS

The procedures to change the camera settings, choose images, etc., are performed by using the SET button to control the monitor display. This operation is used very frequently, so it is best to become familiar with it right away.

1 **Turn on the camera.**

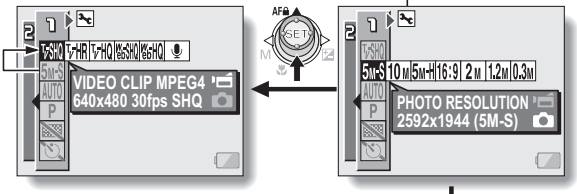


2 **Press the MENU button.**

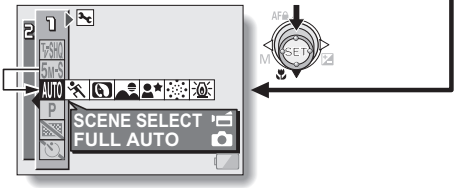
- The Menu Screen appears.

<Select the icon above or below>

To select the icon above, toggle the SET button up.



To select the icon below, toggle the SET button down.



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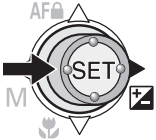
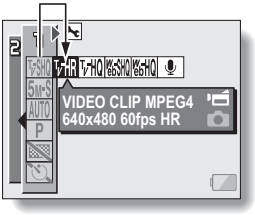
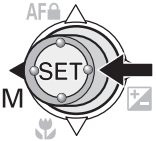
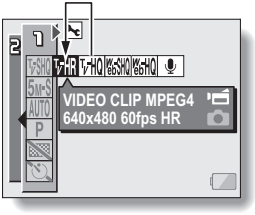
<Select the icon to the left or right>
To select the icon to the right, toggle the SET button to the right.



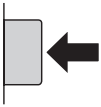


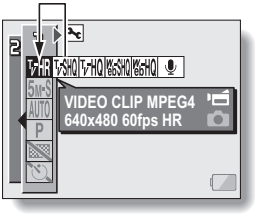
To select the icon to the left, toggle the SET button to the left.





<Actuate the selected icon>
Press the SET button. The selected icon moves to the left end of the lineup.





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DATE AND TIME SETTING

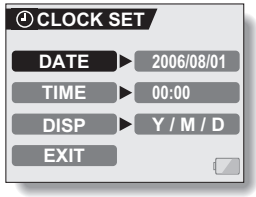
The camera will record the date and time an image or audio recording is taken so that you can display them during playback. Therefore, before capturing images, make sure the correct date and time are set.

Example: To set the clock to 7:30 p.m. on December 24, 2006

1 **Display the Option Screen (page 118).**

2 **Select the clock set icon [⏲], and press the SET button.**

- The Clock Set Screen appears.
- The current date and time settings are shown.
- Follow the procedures below to enable or disable the date display during playback, to set the display format for the date, and to set the date and time.
- To return to the Option Screen, press the MENU button, or select “EXIT” and press the SET button.



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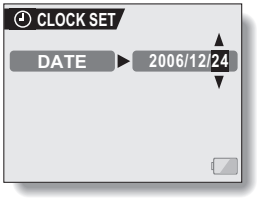
3 **Set the date.**

① Select “DATE”.
② Press the SET button.
- The Set Date Screen appears.

③ Set the date to “2006/12/24”.
- The date is set in the following order: Set the year → Set the month → Set the day.
- Toggle the SET button left or right to select year, month or day. Toggle the SET button up or down to increase or decrease the number.

④ Press the SET button.

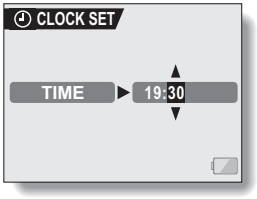


4 **Set the clock.**

① Select “TIME”.
② Press the SET button.
- The Set Time Screen appears.

③ Set the time to “19:30”.
- The time is set in the following order: Set the hour → Set the minute.
- A 24-hour clock is used for the time display.

④ Press the SET button.



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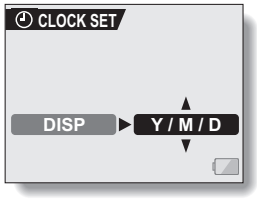
5 **Set the order in which the date is displayed during playback.**

① Select “DISP”.
② Press the SET button.
- The Set Date Format Screen appears.

③ Toggle the SET button up or down.
- Toggle the SET button up to change the displayed date order as follows:



→ year/month/day → month/day/year → day/month/year

Toggle the SET button down to change it in the reverse order.

④ Press the SET button.

6 **Select “EXIT”, and press the SET button.**
- The date and time setting is completed, and you are returned to the Option Screen.
- To return to the Shooting or Playback Screen, press the MENU button.

HINT
- Under normal conditions, while the battery pack is being replaced, an internal battery will maintain the date and time settings. However, there is a small chance the settings may be lost (The backup will last for about 7 days). It is recommended to check that the date and time settings are still correct after replacing the battery pack and before shooting or recording of any type (follow steps **1** and **2**).

To correct the date and time settings
- After steps **1** and **2**, select the line of the setting that you want to change, press the SET button, and follow the steps in the respective paragraphs above to change the setting.

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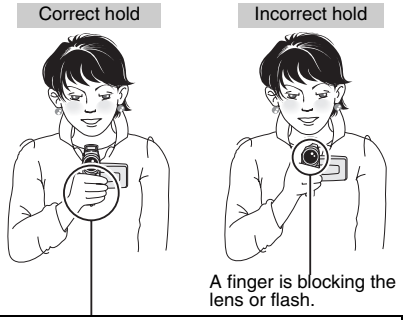
BEFORE TAKING PICTURES

How to hold the camera

Hold the camera securely, keeping your elbows close to your body and making sure the camera is stable.


Correct hold
Incorrect hold
A finger is blocking the lens or flash.
<Holding the camera>
Example 1:
Grip the camera by wrapping the fingers of the right hand, from the little finger to the middle finger, around the camera, and hook the index finger above the lens.
Example 2:
Grip the camera by wrapping the fingers of the right hand, from the little finger to the index finger, around the camera.

Make sure that the lens and flash are not blocked by your fingers or the strap.

HINT

- Images captured in the still image shooting mode can be rotated when they are played back (page 99).
- When the optical zoom is used or when the autofocus is operating, the image may appear to waver, but this is not a malfunction.

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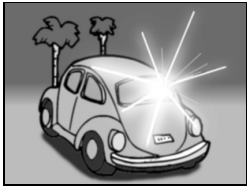
Using the autofocus

The autofocus will work in almost all situations; however, there are certain conditions that may cause the autofocus function to not work properly. If the autofocus function is not working properly, set the focus range to capture images (page 79).

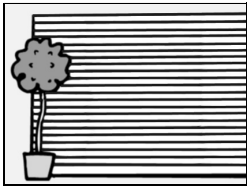
■ **Conditions that may cause incorrect focus**

The following examples are some of the situations where the autofocus function may not work.

- **Subjects with low contrast, very bright subjects at the center of the image or dark subjects or locations**
  Use the focus-lock function to lock the focus on an object with contrast at the same distance as the desired subject.



- **Subjects without vertical lines**
  Use the focus-lock function to lock the focus while framing the subject vertically, then re-orient the camera to compose a horizontally framed image.



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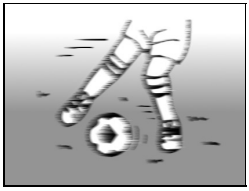
The following examples are some of the situations where the autofocus function may work, but not as desired.

- **When both near and far objects are present**
  Use the focus-lock function to lock the focus on an object at the same distance as the desired subject, then reposition the camera to compose the picture.

- **Fast-moving subjects**
  Use the focus-lock function to lock the focus on an object at the same distance as the desired subject, then reposition the camera to compose the picture.



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Hints for taking pictures

Muting the operation sounds

- The operation sounds that are generated, for example, when the still image shooting button, MENU button or SET button is pressed, as well as the audio guidance when you switch the mode, can be muted (page 123).

Where is the image and audio data saved?

- All the image and sound data is recorded on the card installed in the camera.

Taking pictures in backlight conditions...

- When taking pictures with the light coming from behind the subject, due to the characteristics of the lens, light lines or ghost patterns (flare phenomenon) may appear in the captured image. In this situation, it is recommended that you avoid taking pictures with the subject lit from behind.

While the image data is being recorded...

- While the multi-indicator is flashing red, the image data is being written to the memory, during which time it is not possible to capture another image. Another image can be captured after the flashing red indicator turns off. However, even when the multi-indicator is flashing red, depending on the camera's internal memory remaining capacity, in some cases the next image can be captured about 2 seconds after shooting.

Checking the last image shot (instant review)

- After shooting a picture, you can immediately view it by pressing the SET button once.
- During instant review of a video clip, normal play, reverse play and pause, etc. are available (page 44).
- If you wish to delete the image (for a video clip, it must be in the pause or stop mode), toggle the SET button up to access the delete function.
- You can view other images while the instant review display is showing by toggling the SET button to the left or right.
- Cancel the instant review display by toggling the SET button down.

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VIDEO CLIP RECORDING AND PLAYBACK

Recording video clips

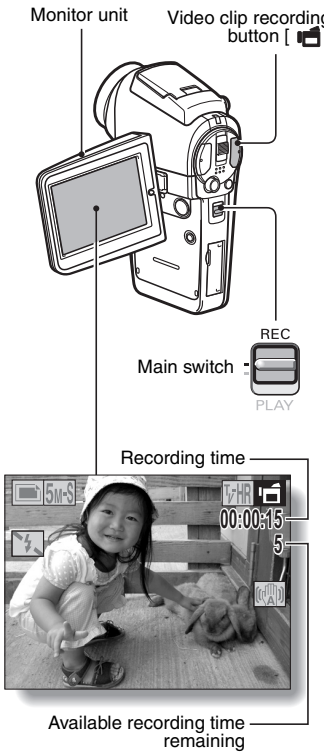
1 **Turn on the camera.**
If the monitor unit is closed → Open the monitor unit.
If the camera is in the power save mode → Press the ON/OFF button.

2 **Set the main switch to REC.**

3 **Press the video clip recording button [ ].**

- Recording begins.
- It is not necessary to keep the shutter release button pressed while shooting.
- When the remaining recording time available for the currently recording clip becomes little, a countdown of the remaining recording time appears on the display.

4 **End the recording.**
- Press the video clip recording button again to stop recording.



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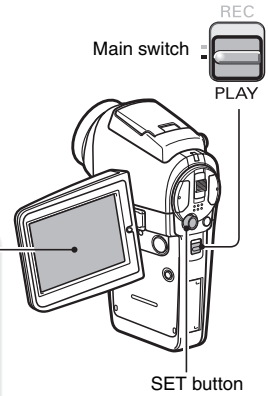
Playing back a video clip

5 **Set the main switch to PLAY.**
- The video clip just recorded is shown on the monitor.

6 **Press the SET button.**
- Playback of the video clip begins.



<Example: After recording a video clip: Normal mode>

<Example: After recording a video clip: HD mode>

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To do this...		Do this
Normal forward playback		Press the SET button.
Stop playback		During playback, toggle the SET button down.
Pause		During playback, press the SET button or toggle the SET button up. During accelerated playback, toggle the SET button up.
To play back one image at a time (single-frame step)	During forward playback	After pausing playback, toggle the SET button to the right.
	During reverse playback	After pausing playback, toggle the SET button to the left.
Slow playback	During forward playback	After pausing playback, press and hold the SET button to the right.
	During reverse playback	After pausing playback, press and hold the SET button to the left.
To accelerate playback	Forward playback	During forward playback, toggle the SET button to the right. * The playback speed changes each time the SET button is toggled to the right, as follows: Normal playback → 2x → 5x → 10x → 15x Toggle the SET button to the left to resume normal playback speed.
	Reverse playback	During forward playback, toggle the SET button to the left. * The playback speed changes each time the SET button is toggled to the left, as follows: 15x ← 10x ← 5x Toggle the SET button to the right to resume normal playback speed.
Return to normal playback speed		Press the SET button.
Adjusting the volume		**Louder:** During playback, push the zoom switch toward the [T] side. **Softer:** During playback, push the zoom switch toward the [W] side.

When you are finished using the camera...

- **Press the ON/OFF button to turn the camera off.**

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HINT

Adjusting the monitor brightness

- While the Shooting Screen is active, You can quickly access the screen for adjusting the brightness of the monitor by pressing the MENU button for at least 1 second.

The focus can be locked.

- The autofocus can be set to a fixed focus during video clip recording if you toggle the SET button up. When the autofocus is fixed, the AF🔒 icon appears on the monitor.
- When the focus range (page 79) setting is changed, the focus lock is released.

The data for a video clip is very large.

- Therefore, be aware that if the video clip is uploaded to a computer to be played back, the computer may not be able to play back the video fast enough, making it appear jerky. (The video will always be displayed properly on the monitor or a television.)
- Depending on the card, shooting may end even before the possible shooting time indicated.

Display the video clip playback point

- During video clip playback, press the MENU button for at least 1 second to display a bar showing the current playback point in the video clip.
- Press the MENU button for about 1 second to cancel the bar.

CAUTION

During video clip playback, the sound of a motor is audible...

- During recording, the sound of the optical zoom movement or autofocus movement was recorded. This is not a malfunction.

If no audio is heard...

- The audio is not played back when the video clip is played back in the frame-by-frame, fast playback or reverse playback mode.

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CAPTURING AND PLAYING BACK STILL IMAGES

Shooting single shots

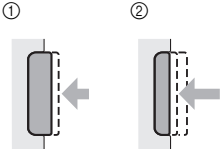
1 **Press the ON/OFF button to turn the camera on.**

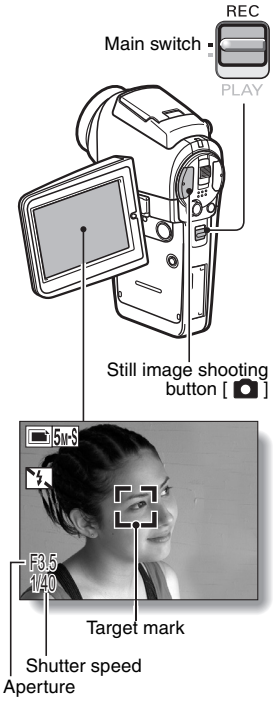
2 **Set the main switch to REC.**

3 **Press the still image shooting button [ ].**

① **Press the still image shooting button halfway.**
- The autofocus operates, and the image is focused (focus lock).

② **Continue to gently press the still image shooting button all the way.**
- The shutter releases and the image is captured.
- You can view the captured image on the monitor by keeping the still image shooting button depressed when you capture the image (post-view [page 125]).





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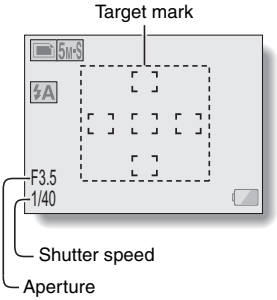
HINT

What is the camera focusing on?

- A target mark ⛶ on the monitor shows the area the camera is focusing on.
- The camera automatically determines the correct focus by measuring from 5 different focus points within the shooting area. If the target mark is at a position that is different from the point you wish to focus on, you can refocus, for example, by changing the shooting angle.
- The large target mark appears when the camera focuses on a wide area in the center of the screen.



The shutter speed and aperture are displayed

- When the camera focuses and the target mark appears, at the same time, the shutter speed and aperture settings are also displayed. You can use them as a reference when shooting.

If the camera shake icon appears...

- During still image shooting, if the shutter speed is slow and the possibility that the image may be blurred due to camera shake becomes high, the camera shake icon may appear on the monitor. In this case, use a tripod to stabilize the camera when shooting, or set the flash operation mode to automatic (page 61).
- When shooting with the scene select function set to the fireworks mode, the camera shake icon always appears, but this is normal.

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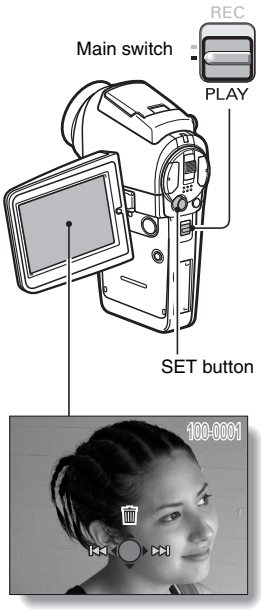
Viewing still images

1 **Set the main switch to PLAY.**
- An image is displayed on the monitor.

2 **Select the image you wish to view.**
To display the previous image, toggle the SET button to the left. To display the next image, toggle the SET button to the right.
- Display the desired image.



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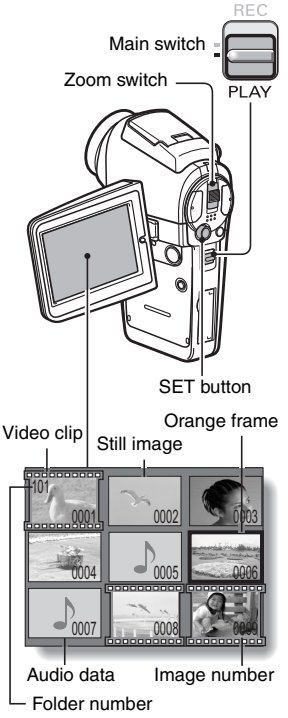
9-image display playback

1 **Set the main switch to PLAY.**

2 **Push the zoom switch toward the [W] ([▪▪]) side.**
- The 9-image display appears.

3 **Select the image to play back.**
- Toggle the SET button up, down, left or right to move the orange frame to the desired image, and press the SET button.
  Instead of pressing the SET button, you can push the zoom switch toward the [T] ([🔍]) side to show the image full screen.



HINT
- The 9-image multi-playback display can also be accessed by selecting ▪▪ on the Playback Setting Screen.

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Magnifying (zooming in) the image

1 **Display the image that you want to magnify.**
- For a video clip, pause playback at the place you want to magnify.

2 **Push the zoom switch toward the [T] ([ ]) side.**
- Magnification is enabled.
- The image is magnified, and the central portion of image is displayed.
- Toggle the SET button to view different parts of the magnified image.
  To magnify:
  Magnification increases each time the zoom switch is pushed toward the [T] ([ ]) side.
  To return to normal size:
  Magnification decreases each time the zoom switch is pushed toward the [W] ([ ]) side.
- Press the SET button to return to the normal (100%) view.

HINT

The magnified portion of the image can be saved as a separate image.
- Press the still image shooting button. The magnified portion is saved as a new still image.

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SHOOT A STILL IMAGE WHILE RECORDING A VIDEO CLIP

You can capture a still image (a single-shot) while recording a video clip.

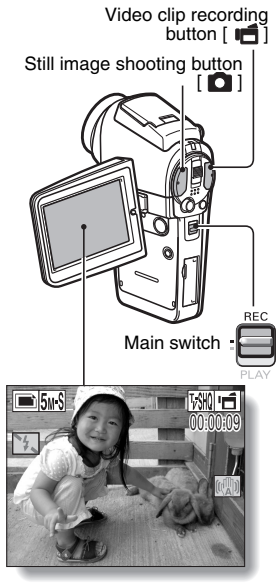
1 **Press the ON/OFF button for at least 1 second to turn the camera on.**

2 **Set the main switch to REC.**

3 **Press the video clip recording button [ ].**

4 **When you see a scene you'd like to capture as a still image, press the still image shooting button [ ].**

5 **End the recording.**
- Press the video clip recording button to stop recording.



CAUTION
- When shooting a still image while recording a video clip, the flash does not operate.
- When shooting a still image while recording a video clip, the display briefly pauses, and then returns to the video clip display after the still image is captured.
- If the still image resolution is set to 10M, it automatically changes to 5M-S and the image is captured.
- When the remaining video recording time becomes approximately 50 seconds, it will no longer be possible to capture a still image while recording a video clip. The exact remaining recording time at which this occurs will differ depending on the subject and on the video clip mode setting (page 71). If you intend to capture a still image while recording a video clip, it is suggested that you take note of the remaining video recording time.

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SEQUENTIAL SHOTS

Your camera is capable of capturing both standard sequential shots and auto bracket shots (sequential images as the exposure changes). The procedure below explains how to take standard sequential shots. For information concerning auto bracket shots, please see page 87.

1 **Press the ON/OFF button for at least 1 second to turn the camera on.**

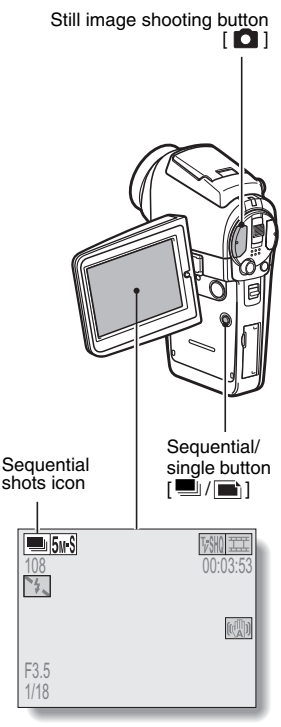
2 **Set the main switch to REC.**

3 **Press the sequential/single button [/].**

- The camera switches to the sequential shots mode, and the sequential shots icon appears on the monitor.
- Each time the sequential/ single button is pressed, the camera switches between the single-shot mode and the sequential shots mode.

4 **Press the still image shooting button.**

- Shooting begins. Shooting continues as long as the still image shooting button is kept pressed.
- The maximum number of sequential shots is 10 frames when the still image resolution is set to 1.2M or 0.3M, and 6 frames at other resolution settings.



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5 **Release the still image shooting button.**

- Shooting ends.
- The playback procedure for images in a sequential shots series is the same as for single-shot still images (page 48).

HINT

About the focus when shooting sequential shots

- When sequential shots are captured, the autofocus operates when the still image shooting button is pressed halfway, fixing the focus.
- Shooting sequential shots at a resolution of 10M is not possible. If the resolution is set to 10M, it automatically changes to 5M-H.

Can the self-timer and/or flash be used?

- The self-timer and flash do not operate when shooting sequential shots.

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RECORDING IN THE HD MODE

In addition to the standard video clip recording mode (normal mode, aspect ratio 4:3), your camera can also record video clips in the wide-screen mode (HD mode) with an aspect ratio of 16:9.

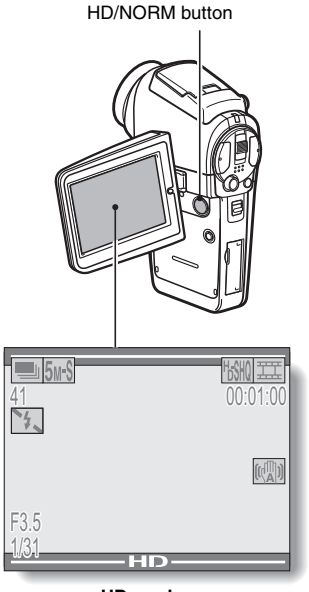
Switching between the normal mode and HD mode

1 **Press the ON/OFF button for at least 1 second to turn the camera on.**

2 **Set the main switch to REC.**

3 **Press the HD/NORM button.**
- The monitor display changes to the 16:9 aspect ratio HD mode.
- Each time the HD/NORM button is pressed, the mode switches between the HD mode and the normal mode.

4 **Press the video clip recording button [ ].**



<HD mode>

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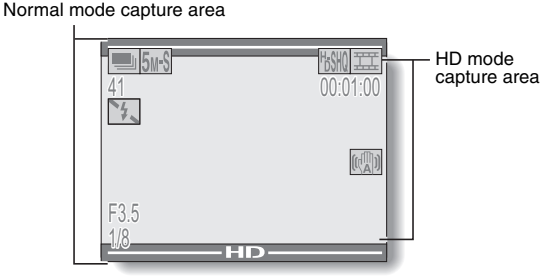
RECORDING IN THE HD MODE

Outline of the HD Mode Shooting Screen

In the HD mode, the lighter area on the screen indicates the recording area.



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AUDIO RECORDING AND PLAYBACK

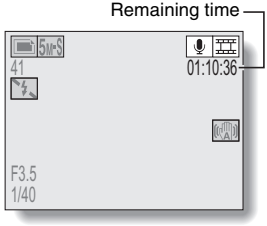
Your camera can make audio recordings and play them back.

Audio recording

1 **Set the main switch to REC.**

2 **Press the MENU button.**
- The menu display appears.

3 **From the video clip mode menu, select the audio memo icon , and press the SET button.**
- The audio recording mode is enabled.
- The menu display is canceled if the MENU button is pressed.



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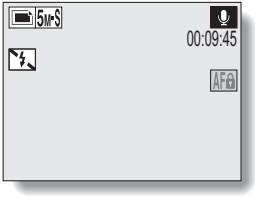
4 **Press the video clip recording button.**

- Audio recording begins. During recording, [●] appears in the monitor.
  It is not necessary to continue pressing the video clip recording button while shooting.
- The maximum time for recording a continuous audio memo is about 13 hours.



5 **End the recording.**

- Press the video clip recording button again to stop recording.

HINT

You can capture a still image during an audio recording

- Note, however, that if the resolution in the still image mode is set to 10M, it automatically changes to 5M-S and the image is captured.

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Audio playback

1 **Display the desired audio data.**

2 **Play back the recording.**

Start forward playback:
Press the SET button.

Pause: During playback, press the SET button, or toggle the SET button up. During fast forward or fast reverse, toggle the SET button up.

Stop playback:
During playback, toggle the SET button down.

Fast forward/fast reverse:

- Fast forward/fast reverse playback is possible at 2x (forward only), 5x, 10x and 15x.
- Toggle the SET button to the left or right during playback to activate fast forward/fast reverse.
- The playback speed changes each time the SET button is toggled to the left or right.

Fast forward (toggle the SET button to the right)
2x → 5x → 10x → 15x
* Toggle the SET button to the left to return to normal speed.

Fast reverse (toggle the SET button to the left)
15x ← 10x ← 5x
* Toggle the SET button to the right to return to normal speed.

CAUTION
If no audio is heard...

- The audio is not played back when the audio memo is played back in the fast playback or fast reverse mode.

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SHOOTING AND PLAYBACK WITH THE REMOTE CONTROL UNIT

The remote control sensor on your camera makes it possible to capture images and play them back using the supplied remote control unit.

1 **Prepare the remote control unit (page 23).**

2 **Turn the camera on, and set the main switch to REC or PLAY.**
- Set the main switch to REC for shooting, or to PLAY for playback.

3 **Aim the remote control unit at the camera's remote control sensor.**
- Open the monitor unit.

4 **Press the buttons on the remote control unit to operate the camera.**

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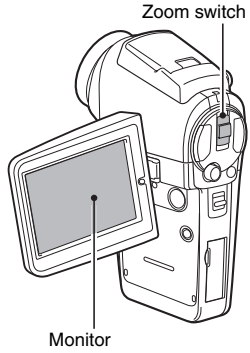
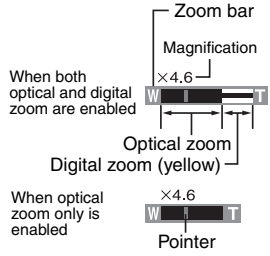
USING THE ZOOM

Your camera has two zoom functions: optical zoom and digital zoom.
You can specify whether or not the digital zoom is enabled (page 130).

1 **Point the camera lens at the subject.**

2 **Press [T] or [W] on the zoom switch to compose the desired image.**
[T]: Zoom in on the subject.
[W]: Zoom out.
- When the zoom switch is pressed, the zoom bar appears on the monitor.
- When moving the optical zoom, press the zoom switch lightly to zoom slowly, and press more strongly to zoom quickly.
- When the optical zoom factor is at maximum, zooming stops temporarily. When the zoom switch is pressed toward the [T] side again, the mode changes to the digital zoom mode and zooming continues.





3 **Take the picture.**
For video clip recording, see page 42.
For shooting single shots, see page 46.
For shooting sequential shots, see page 52.

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SHOOTING WITH THE FLASH

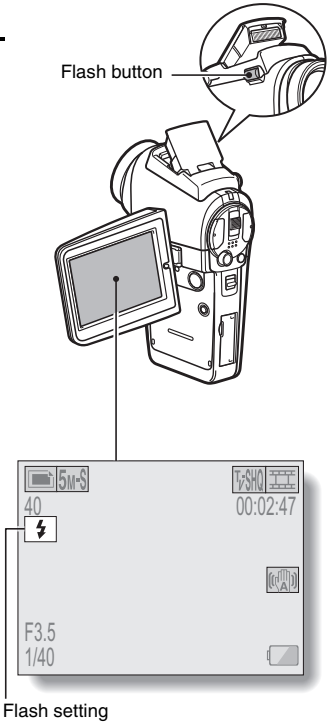
The flash is used not only for taking pictures where there is insufficient light, but also when the subject is in shade or in backlight conditions. Your camera's flash has four modes of operation (automatic flash mode, forced flash mode, flash off mode, and red-eye reduction mode). Select the flash mode that is appropriate for the surrounding conditions. The flash can be enabled only when taking single-shot still images.

1 **Set the main switch to REC.**

2 **Press the flash button to extend the flash.**

- The flash setting appears on the monitor.

No flash indication:
The camera will detect the subject brightness and use the flash only when required. In a backlight situation, if only the center of the image is very dark, the flash will operate to compensate (auto flash).



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: The flash will operate with every image captured regardless of the conditions. Use this setting under backlight conditions, when the subject is in shade, under fluorescent lighting conditions, etc. (forced flash).

: The flash will not operate even in dark situations. Use this setting when capturing an image in a location where flash photography is prohibited, or when shooting a night landscape scene (flash off).

: The camera will detect the subject brightness and use the flash only when required. At this time the flash will operate in a manner that reduces the red reflection ("red-eye") in the subject's eyes (red-eye reduction).

3 **Press the flash button to set the flash mode.**

- Each time the flash button is pressed, the flash mode changes.
- Display the icon for the desired flash mode.

4 **Press the still image shooting button.**

- The picture is snapped and the flash operates according to the selected mode.

HINT

- The flash cannot be used during video clip recording or in the sequential shots mode.

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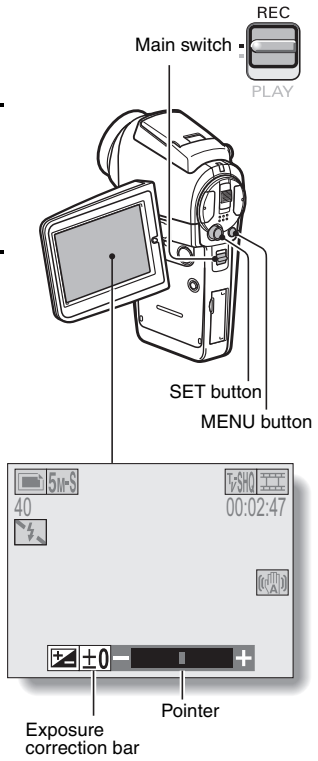
EXPOSURE CORRECTION

When capturing images, you can make the image lighter or darker.

1 **Set the main switch to REC.**
- If the Shooting Setting Screen is displayed, press the MENU button to exit it.

2 **While the Shooting Screen is displayed, toggle the SET button to the right.**
- The exposure correction bar appears.

3 **Toggle the SET button to the left or right to adjust the exposure.**
- The exposure setting numerical value is shown at the left end of the exposure bar.
- The exposure can be set to a value from –1.8EV to +1.8EV.
- The exposure correction bar is canceled when the MENU button or the SET button is pressed.



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HINT

The exposure correction setting is canceled in the following cases:

- When the pointer is set to the center position.
- When the Option Screen is accessed.
- When the main switch is set to PLAY.
- After the power is turned off.

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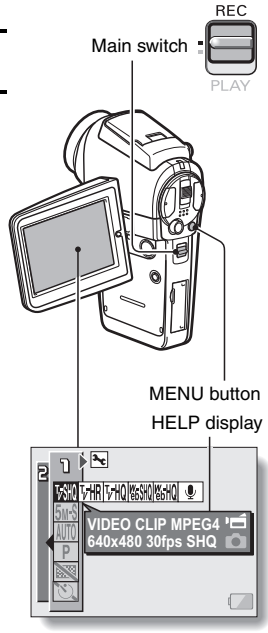
DISPLAYING THE SHOOTING SETTING SCREENS

The Shooting Setting Screens are used to adjust your camera's shooting settings. The Shooting Setting Screens are organized into two displays: **PAGE 1** and **PAGE 2**. The **PAGE 1** settings (page 67) cover the basic shooting settings, and the **PAGE 2** settings (page 69) provide you with more detailed settings.

1 **Turn on the camera (page 30).**

2 **Set the main switch to REC.**

3 **Press the MENU button.**
- The Shooting Setting Screen appears.
- Pressing the MENU button again will cancel the Shooting Setting Screen.



About the HELP display

When the Shooting Setting Screen icon is selected, the HELP display appears, showing the function of the selected icon and the shooting mode(s) for which it is effective.

VIDEO CLIP MPEG4
640x480 30fps SHQ

<Applicable to the video clip recording mode>

<Applicable to the still image shooting mode>

<Applicable to both shooting modes>

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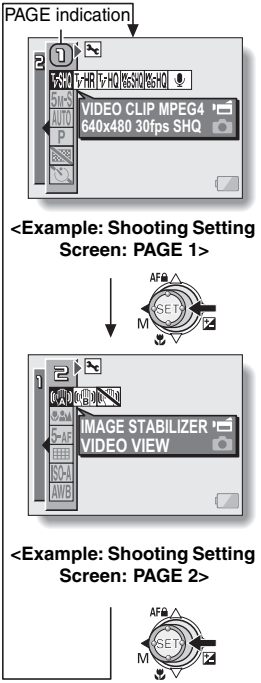
SWITCHING THE PAGE

Switch from **PAGE 1** to **PAGE 2**, or vice versa, depending on how you wish to use your camera.

1 **Display a Shooting Setting Screen.**

2 **Toggle the SET button to the left.**

- The Shooting Setting Screen PAGE changes.
- Each time the SET button is toggled to the left, the PAGE changes.



<Example: Shooting Setting Screen: PAGE 1>

<Example: Shooting Setting Screen: PAGE 2>

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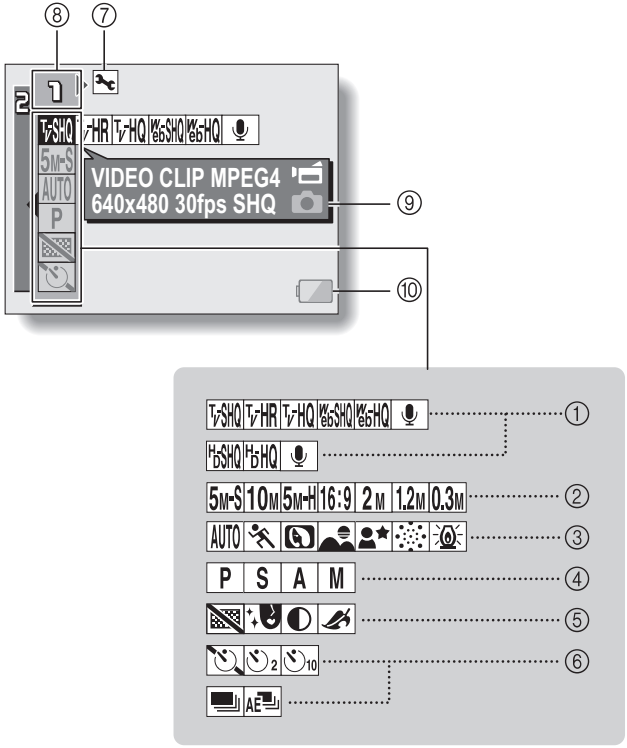
DISPLAYING THE SHOOTING SETTING SCREENS

Overview of the Shooting Setting Screens

PAGE 1



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① **Video clip mode menu (page 71)**

<In the normal mode>

- 640 SHQ: Record at 640 × 480 pixels, 30 frames per second, very high image quality.
- 640 HR: Record at 640 × 480 pixels, 60 frames per second.
- 640 HQ: Record at 640 × 480 pixels, 30 frames per second, high image quality.
- 320 SHQ: Record at 320 × 240 pixels, 30 frames per second.
- 320 HQ: Record at 320 × 240 pixels, 15 frames per second.
- : Make an audio recording.

<In the HD mode>

- 1280 SHQ: Record at 1,280 × 720 pixels, 30 frames per second, very high image quality.
- 1280 HQ: Record at 1,280 × 720 pixels, 30 frames per second, high image quality.
- : Make an audio recording.

② **Still image mode menu (page 72)**

- 5M-S: Shoot image at 2,592 × 1,944 resolution (about 5 million pixels [normal compression])
- 10M: Shoot image at 3,680 × 2,760 resolution (about 10 million pixels)
- 5M-H: Shoot image at 2,592 × 1,944 resolution (about 5 million pixels [low compression])
- 16:9: Shoot at 2,592 × 1,464 resolution (approx.3.8 million pixels)
- 2M: Shoot image at 1,600 × 1,200 resolution (about 2 million pixels)
- 1.2M: Shoot image at 1,280 × 960 resolution (about 1.2 million pixels)
- 0.3M: Shoot image at 640 × 480 resolution (about 300,000 pixels)

③ **Scene select menu (page 73)**

- AUTO: Full auto photography
- : Sports photography
- : Portrait photography
- : Landscape photography
- : Night view portrait photography
- : Fireworks photography
- : Lamp photography

④ **Manual exposure setting menu (page 74)**

- P: The exposure is set automatically.
- S: Set the shutter speed and ND filter settings.
- A: Set the aperture size and ND filter settings.
- M: Set the aperture size, shutter speed and ND filter settings.

⑤ **Filter menu (page 76)**

- : No filter
- : Cosmetic filter selected
- : Monochrome filter selected
- : Sepia filter selected

⑥ **In the single-shot/video clip recording modes: Self-timer menu (page 86)**

- : Self-timer off
- 2: Shooting begins 2 seconds after the still image shooting button or video clip recording button is pressed.
- 10: Shooting begins 10 seconds after the still image shooting button or video clip recording button is pressed.

⑥ **In the sequential shots mode: Sequential shots mode menu (page 87)**

- Appears only in the sequential shots mode.
- : Standard sequential shots
- AE: AE shift sequential shots (auto bracket series)

⑦ **Option icon (page 118)**

- Displays the Option Screen.

⑧ **PAGE display (page 66)**

⑨ **HELP display (page 89)**

⑩ **Remaining battery power (page 149)**

* When you specify multiple functions that cannot be simultaneously enabled, the function which was last set becomes the active setting, and the other settings accordingly change automatically.

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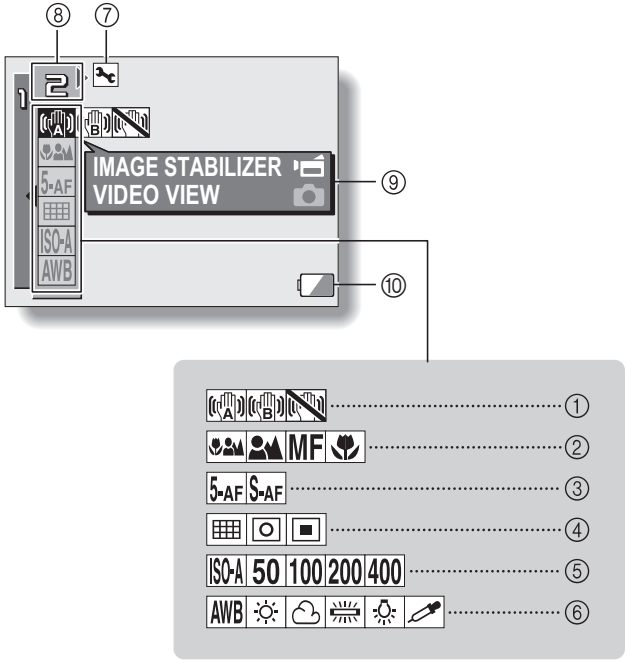
DISPLAYING THE SHOOTING SETTING SCREENS

PAGE 2



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① **Image stabilizer menu (page 77)**

: Shoot using the video clip field of view display.

: Shoot using the still image field of view display.

: Image stabilizer function off

② **Focus menu (page 79)**

: All ranges mode

: Normal mode

MF: Manual mode

: Super macro (close-up) mode

③ **Focus mode menu (page 81)**

5-AF: 5-point range finder focus setting

S-AF: Spot focus setting

④ **Light-measuring mode (EXP MEASURE) menu (page 82)**

: Multi-section light-measuring setting

: Center-weighted light-measuring setting

: Spot light-measuring setting

⑤ **ISO sensitivity menu (page 83)**

ISO-A: Auto sensitivity (corresponds to ISO 50 to 200)

50: Corresponds to ISO 50

100: Corresponds to ISO 100

200: Corresponds to ISO 200

400: Corresponds to ISO 400

⑥ **White balance menu (page 84)**

AWB: White balance is automatically adjusted depending on ambient lighting

: For photography in fair weather (sunny) conditions

: In overcast conditions

: Under fluorescent lighting

: Under incandescent lighting

: For setting the most accurate white balance

⑦ **Option icon (page 118)**
- Display the Option Screen.

⑧ **PAGE display (page 66)**

⑨ **HELP display (page 89)**

⑩ **Remaining battery power (page 149)**

* When you specify multiple functions that cannot be simultaneously enabled, the function which was last set becomes the active setting, and the other settings accordingly change automatically.

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VIDEO CLIP MODE (IMAGE QUALITY) SETTING

When it comes to video clips, a larger number of pixels and a higher frame rate means better image quality and smoother playback. On the other hand, the file size becomes large and uses more memory. Set the image quality to a setting that's right for your purpose.

1 **Display the PAGE 1 Shooting Setting Screen (page 65).**

2 **Select the video clip mode menu.**

	Setting	Resolution (units: pixels)	Frame rate	Image quality
HD mode	HD SHQ	1,280 × 720	30 fps	Very high image quality
	HD HQ			High image quality
Normal mode	TY SHQ	640 × 480	30 fps	Very high image quality
	TY HR		60 fps	High image quality
	TY HQ		30 fps	High image quality
	WEB SHQ	320 × 240	30 fps	High image quality
	WEB HQ		15 fps	Standard image quality
HD mode/ normal mode		—	—	—

3 **Select the desired icon from the video clip mode menu, and press the SET button.**

- This completes the video clip mode setting.

CAUTION

When editing video clips...

- In order for video clips to be joined, they must have been photographed in the same mode.
- Video clips that were photographed in different modes cannot be joined.

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STILL IMAGE MODE (RESOLUTION) SETTING

By setting the still image resolution (pixels) to a higher setting, image detail is enhanced for a smoother, finer picture. However, the file size also becomes large and uses more memory. Select the resolution setting that suits your purpose.

1 **Display the PAGE 1 Shooting Setting Screen (page 65).**

2 **Select the still image mode menu.**

Setting	Resolution (units: pixels)	Compression	Applicable shooting mode(s)
10M	3,680 × 2,760	Standard compression	Single-shot
5M-H	2,592 × 1,944	Low compression	Single-shot/ sequential shots
5M-S	2,592 × 1,944	Standard compression	
16:9	2,592 × 1,464		
2M	1,600 × 1,200		
1.2M	1,280 × 960		
0.3M	640 × 480		

3 **Select the desired icon from the still image resolution menu, and press the SET button.**

- This completes the still image resolution setting.

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SCENE SELECT

You can select from various preset settings (aperture, shutter speed, etc.) for specific shooting conditions.

1 **Display the PAGE 1 Shooting Setting Screen (page 65).**

2 **Select the scene select menu.**

AUTO: The camera automatically makes the optimum settings suitable for the surrounding conditions (full auto).

: Capture a split-second image of a fast-moving subject (sports mode).

: Enhance the 3D feeling of the subject by blurring the background (portrait mode).

: For beautiful shots of distant scenery (landscape mode).

: Photograph the subject while keeping the background night scenery (night view portrait mode: For single-shot shooting, video clip recording only).

: For capturing fireworks at night (fireworks mode: For single-shot shooting, video clip recording only).

: Photograph in low-light conditions (lamp mode: For single-shot shooting, video clip recording only).

3 **Select the desired icon from the scene select menu, and press the SET button.**

- This completes the scene select function setting.
- To return to normal photography, select AUTO from the scene select menu, and press the SET button.

HINT

- When capturing images using the lamp , fireworks or night view portrait setting, use a tripod or other method to stabilize the camera.
- A table showing the limitations for settings corresponding to scene select icons other than AUTO is on page 182.

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EXPOSURE SETTING

Various settings—including shutter speed, aperture size, the ND filter ON/OFF status—can be set by the user.

1 **Display the PAGE 1 Shooting Setting Screen (page 65).**

2 **Select the manual exposure menu.**

[P]: The optimum shutter speed and aperture size are set according to the brightness of the subject (aperture and shutter variable program AE).

Example: For simple shooting with minimum setup, using the camera's automatic settings.

[S]: This allows you to set a specific shutter speed and enable/disable the ND filter. The camera automatically sets an appropriate aperture size based on this setting (shutter speed priority AE).

Example: To set a fast shutter speed for capturing a clear image of a fast-moving object, or to set a slow shutter speed to shoot the flow of a background scene.

By using the flash in combination with a slow shutter speed, you can create beautiful photographs of people against a background night scene (slow synchro photography).

[A]: This allows you to set a specific aperture size and enable/disable the ND filter. The camera automatically sets an appropriate shutter speed based on this setting (aperture priority AE).

Example: To open the aperture for portraits with a blurred background (for a shallow field depth), or to close the aperture for a clear foreground and background (for a deep field depth).

[M]: This allows you to set a specific shutter speed, aperture size and enable/disable the ND filter (manual exposure control).

Example: When shooting in a dark location without using the flash, set the shutter to stay open for a longer time (slow shutter). When used for shooting nighttime scenes, you can capture lights flowing across the image.

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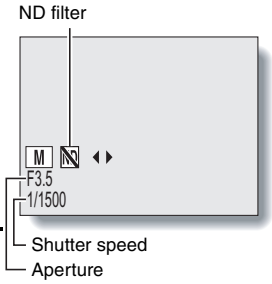
3 **Select the desired icon from the manual exposure menu, and press the SET button.**
<If [S], [A] or [M] was selected>
① Toggle the SET button up or down to select ND filter, aperture value or shutter speed.
② Toggle the SET button left or right to change the setting for the selected parameter.



4 **Press the SET button.**
• This completes the exposure setting.

HINT
- To prevent the effects of camera shake at slow shutter speeds, it is recommended to use a tripod or other method to stabilize the camera.
- A slow shutter speed may be useful for photographing in a darker environment, but noise in the image may be increased.
- To minimize noise in the image, enable the noise reduction function (page 127).
- The manual exposure setting automatically becomes [P] if the scene select function is active or if the mode is set to the AE shift sequential shots mode.
- In the sequential shots mode, the shutter speed is faster than 1/15 sec.
- When a video clip is recorded in a video mode other than [TV-HR] with the shutter speed set to slower than 1/29 sec., the shutter speed during recording is 1/30 sec. And when a video clip is recorded in the [TV-HR] video mode with the shutter speed set to slower than 1/59 sec., the shutter speed during recording is 1/60 sec.

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FILTERS

The filter feature changes image characteristics such as color tones, to apply unique effects to the photographed image.

1 **Display the PAGE 1 Shooting Setting Screen (page 65).**

2 **Select the filter menu.**

: No filter is used (none).

: Skin tones are enhanced in close-up shots (cosmetic filter).

: Snap black-and-white photos (monochrome filter).

: Create a sepia-tone photo (sepia filter).

3 **Select the desired icon from the filter menu, and press the SET button.**

- This completes the filter setting.
- To return to normal photography, select from the filter menu, and press the SET button.

HINT

- A table showing the limitations for settings corresponding to filter icons other than is on page 182.

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MOTION COMPENSATION (IMAGE STABILIZER)

Your camera can minimize a jittery picture by compensating for unintentional hand motion (video clips only).

1 **Display the PAGE 2 Shooting Setting Screen (page 65).**

2 **Select the image stabilizer menu.**

: Compensate for camera shake during video clip recording. The field of view does not change when the video clip recording button is pressed, so this setting is convenient when shooting mostly video clips (video clip field of view display).

: Compensate for camera shake during video clip recording. The field of view does not change when the still image recording button is pressed, so this setting is convenient when shooting mostly still images (still image field of view display).

: Disengages the motion compensation function (OFF).

3 **Select the desired icon from the image stabilizer menu, and press the SET button.**

- This completes the image stabilizer setting.

HINT

If the motion compensation does not seem to be working...

- Due to the mechanical characteristics of this function, it may not be possible for the camera to compensate for violent motion.
- If the digital zoom (page 130) is being used, the large magnification factor may make it difficult for the motion compensation function to work correctly.
- When using a tripod, the docking station or other means to stabilize the camera, please turn the motion compensation function off . If the motion compensation function is enabled when it is not actually needed, it may result in an image that appears unnatural.

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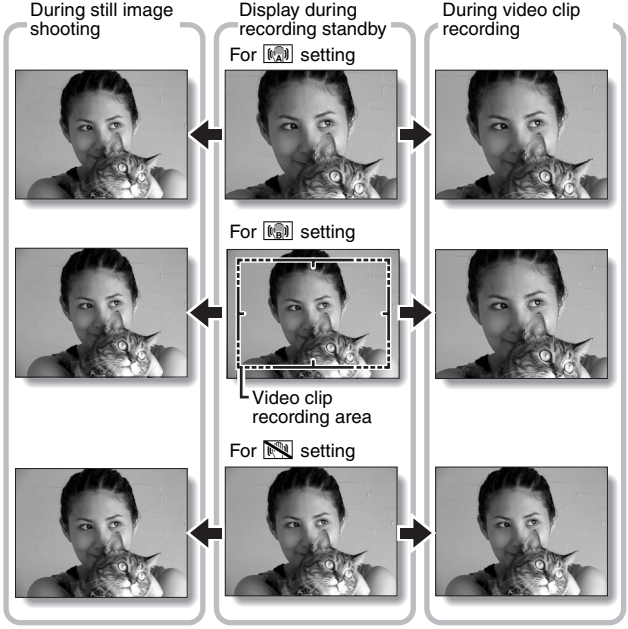
<Concerning the changing field of view when motion compensation is enabled>

- When the motion compensation is set to ON, the field of view during recording standby differs from the recordable field of view as shown below.
- When set to the motion compensation [ON] setting, the video clip recording range is as shown in the recording standby screen.



- When the still image shooting resolution is set to [0.3M] or [1.2M] and the scene selection function to [AUTO], [ ], [ ] or [ ] (page 73), a still image captured during video clip recording will have the same field of view as the video clip.

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FOCUS RANGE

1 **Display the PAGE 2 Shooting Setting Screen (page 65).**

2 **Select the focus range menu.**

- When shooting a subject at a medium to far distance, by setting the focus range to [AF], you will find it both easier and faster to focus.

[AF]: Wide end: 10 cm (3.94 in.) to infinity
Tele end: 1 m (3.28 ft.) to infinity (total range mode)

[AF]: 80 cm (31.50 in.) to infinity (normal mode)

[MF]: The focus can be manually set to any distance from 1 cm (0.39 in.) to 40 m (131.23 ft.), as well as to infinity (manual focus).

[Macro]: 1 cm (0.39 in.) to 1 m (3.28 ft.) (super macro mode: wide end only)

- When the focus range is set to [AF], [Macro] or [MF], the corresponding indication appears on the monitor.

3 **Select the desired icon from the focus range menu, and press the SET button.**

- This completes the focus range setting.

HINT

- From the Shooting Screen, you can quickly change the focus range setting by toggling the SET button down.
- When the focus range is set to super macro [Macro], the zoom is temporarily set to the wide end.
- You can lock the focus by toggling the SET button up.

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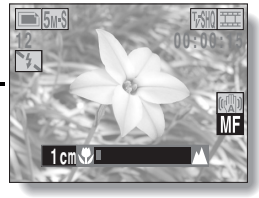
How to use the manual focus

1 **Select the manual focus icon [MF] from the focus menu, and press the SET button.**

2 **Press the SET button.**
- The focus distance adjustment bar appears.



3 **Toggle the SET button to the left or right to adjust the focus distance, and press the SET button.**
- The focus distance is set, and you are returned to the Shooting Screen.

HINT

About the focus range
- The focus distance indication shows the distance between the lens surface and the subject.
- In some cases there may be a slight variance between the distance (numerical figure) you set in the manual focus mode and the actual distance.

About zoom movement when using the manual focus
- If the focus distance is set to 70 cm (27.56 in.) or less, the zoom changes to the largest setting that is suitable for that focus distance.
- When the focus distance is set to 70 cm (27.56 in.) or less, the zoom will function only within the range at which the image is focused.

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FOCUS AREA SETTING

You can choose from the following 2 types of autofocus (still image shooting only):

5-point range finder focus:

The correct focus is determined from 5 different focus points within the shooting area visible on the monitor. When the image is focused, a target mark [ ] appears.

Spot focus:

The camera focuses on the subject in the center of the monitor.

1 **Display the PAGE 2 Shooting Setting Screen (page 65).**

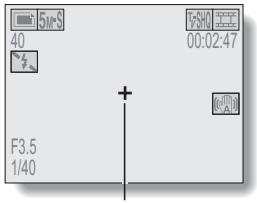
2 **Select the focus mode menu.**

[5-AF]: 5-point range finder focus is selected.

[S-AF]: Spot focus is selected.

3 **Select the desired icon from the focus mode menu, and press the SET button.**

- The focus area is set.
- When the spot focus setting is selected, the focus mark + appears in the center of the monitor.



Focus mark

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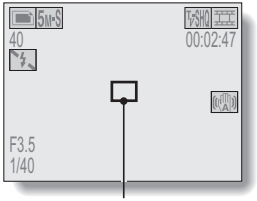
LIGHT-MEASURING MODE SETTING

You can select from 3 types of light-measuring modes.
Multi-section light-measuring:
The light is modulated after sampling from multiple areas of the entire shooting screen.
Center-weighted light-measuring:
The light is modulated for the entire image after measuring from mostly the center area.
Spot light-measuring:
You can compose the picture and capture the image after first modulating the light only at the center spot of the monitor.

1 **Display the PAGE 2 Shooting Setting Screen (page 65).**

2 **Select the light-measuring mode (EXP MEASURE) menu.**
: Multi-section light-measuring
: Center-weighted light-measuring
: Spot light-measuring

3 **Select the desired light-measuring mode from the light-measuring mode (EXP MEASURE) menu, and press the SET button.**
- This completes the light-measuring mode setting.
- When spot light-measuring is selected, the light-measuring spot mark ☐ appears in the center of the monitor.



Light-measuring spot mark

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ISO SENSITIVITY

With the initial settings, the ISO sensitivity is automatically set according to the brightness of the subject. However, the ISO sensitivity can be set to a fixed setting.

1 **Display the PAGE 2 Shooting Setting Screen (page 65).**

2 **Select the ISO sensitivity menu.**

- [ISO-A]: Sets the ISO sensitivity automatically (equivalent to ISO 50 to 200 [video clip recording mode: ISO 200 to 800]).
- [50]: Sets the sensitivity to ISO 50 equivalent (video clip recording mode: ISO 200).
- [100]: Sets the sensitivity to ISO 100 equivalent (video clip recording mode: ISO 400).
- [200]: Sets the sensitivity to ISO 200 equivalent (video clip recording mode: ISO 800).
- [400]: Sets the sensitivity to ISO 400 equivalent (video clip recording mode: ISO 1600).

3 **Select the desired icon from the ISO sensitivity menu, and press the SET button.**

- This completes the ISO sensitivity setting.

HINT

- By setting a higher ISO sensitivity, you can set higher shutter speeds and capture images in darker locations, but noise in the captured images may increase or the images may be irregular.
- If you capture a still image during video clip recording with the ISO sensitivity set to [400], the still image will be captured with the ISO sensitivity setting automatically changed to [200].
- The exposure correction (page 63) is not available when the ISO sensitivity is set to [400].

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WHITE BALANCE

This camera automatically adjusts the white balance under most lighting conditions. However, if you want to specify the lighting conditions or change the overall tone of the image, the white balance can be manually set.

1 **Display the PAGE 2 Shooting Setting Screen (page 65).**

2 **Select the white balance menu.**

AWB: The camera will make the white balance adjustment automatically based on the natural and artificial light conditions.

: For shooting outside on a sunny day.

: For shooting outside on a cloudy day.

: For shooting inside under fluorescent lighting.

: For shooting inside under incandescent lighting.

: This setting is used for a more accurate white balance using the existing light source (one push). Please use it when the light source cannot be identified, for example.

Setting procedure

① **Select the icon and press the SET button.**
- The icon moves to the left end of the line.

② **Fill the entire screen with a plain white card (or piece of paper, etc.), and press the SET button.**
- This completes the white balance setting.
- It is not necessary to complete step **3**.

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3 **Select the desired icon from the white balance menu, and press the SET button.**

- This completes the white balance setting.
- Once the white balance setting is programmed for the [✎] icon, it is retained even if another white balance setting ([AWB], [☼], [☁], [▦], or [☼]) is selected. If you changed to another setting, whenever you select the [✎] icon and press the SET button, the previously programmed setting is recalled.

HINT

To cancel the white balance setting

- Perform step **1**, select [AWB], and then press the SET button.

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SELF-TIMER

1 **Display the PAGE 1 Shooting Setting Screen (page 65).**

2 **Select the self-timer menu.**

: Turns off the self-timer function.

: Turns on the self-timer function. The image is captured about 2 seconds after the still image shooting button or video clip recording button is pressed.

: Turns on the self-timer function. The image is captured about 10 seconds after the still image shooting button or video clip recording button is pressed.

3 **Select the desired icon from the self-timer menu, and press the SET button.**

- This completes the self-timer setting.

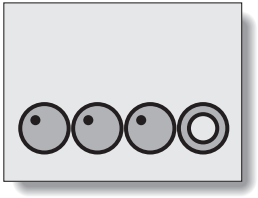
HINT

To pause or cancel the self-timer function...

- If the video clip recording button or still image shooting button is pressed again before the shutter is released, the self-timer countdown temporarily stops. Press the video clip recording button or still image shooting button one more time to restart the self-timer.
- To cancel self-timer photography, select the icon from the self-timer menu, and press the SET button.
- After the self-timer picture is snapped, the self-timer is automatically reset to off .

When is selected...

- When the still image shooting button or video clip recording button is pressed, the multi-indicator will blink for about 10 seconds, and then the image is captured. Also, 4 seconds before the shutter releases, the indication shown in the illustration appears on the monitor.
- If you swivel the monitor unit towards the subject, the self-timer indication will be visible to the subject.



CAUTION

- The self-timer cannot be used in the sequential shots mode.

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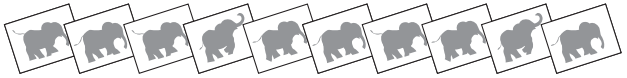
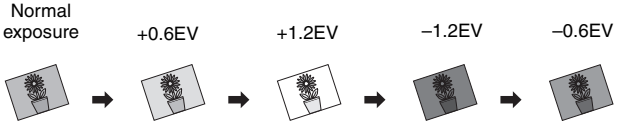
SEQUENTIAL SHOTS MODE SETTING

This camera features two types of sequential shots.

Standard sequential shots [▣]:
Takes standard sequential shots (page 52).

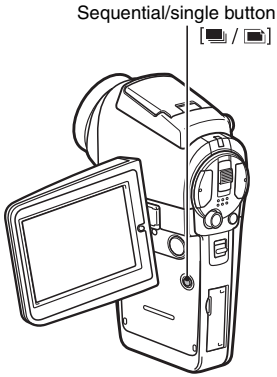


Auto bracket shots [AE▣]:
A series of images is captured while the exposure (shutter speed and aperture size) automatically changes.



1 **Press the sequential/single button [▣ / ▣] to select the sequential shots mode.**

2 **Display the PAGE 1 Shooting Setting Screen (page 65).**



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3 **Select the sequential shots mode menu.**

: Standard sequential shots

: Auto bracket shots

4 **Select the desired icon from the sequential shots menu, and press the SET button.**

• This completes the sequential shots mode setting.

HINT

About the maximum number of sequential shots

- The maximum number of frames in a sequential shots series differs depending on the still image shooting mode.
- Sequential shots photography is not available at resolution 10M.

Still image shooting mode	Maximum frames
5M-H	6
5M-S	
16:9	
2M	
1.2M	10
0.3M	

How many shots in the auto bracket series?

- Five images are captured in the auto bracket shots mode.
- However, when the ISO sensitivity is set to 400, three images (normal exposure → +0.6EV → –0.6EV) are captured.

Can the flash be used?

- The flash does not operate when shooting sequential shots.

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DISPLAYING THE PLAYBACK SETTING SCREENS

The Playback Setting Screens are used to adjust your camera's playback settings. The Playback Setting Screens are organized into two displays: **PAGE 1** and **PAGE 2**. The **PAGE 1** settings (page 91) cover the basic playback settings, and the **PAGE 2** settings (page 92) provide you with more detailed settings.

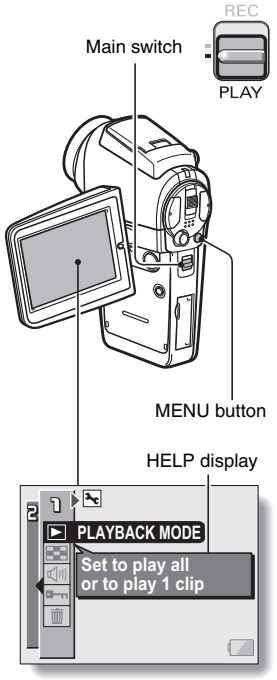
1 **Turn on the camera (page 30).**

2 **Set the main switch to PLAY.**

3 **Press the MENU button.**
- The Playback Setting Screen appears.
- Pressing the MENU button again will cancel the Playback Setting Screen.

About the HELP display

When the PLAYBACK MENU icon is selected, the HELP display appears, showing the function of the selected icon.



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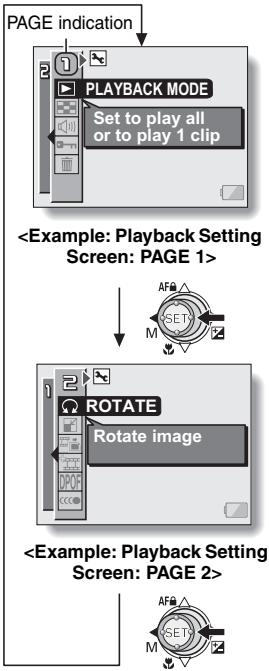
SWITCHING THE PAGE

Switch from **PAGE 1** to **PAGE 2**, or vice versa.

1 **Display a Playback Setting Screen (page 89).**

2 **Toggle the SET button to the left.**

- The Playback Setting Screen changes to the other PAGE.
- Each time the SET button is toggled to the left, the PAGE changes.



<Example: Playback Setting Screen: PAGE 1>

<Example: Playback Setting Screen: PAGE 2>

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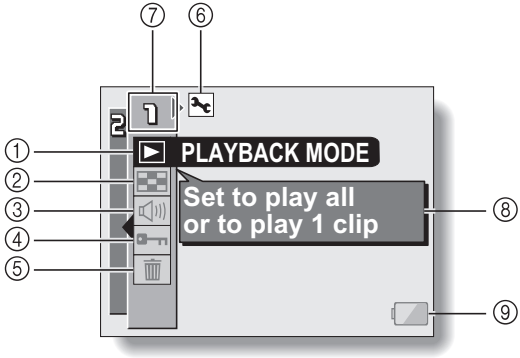
DISPLAYING THE PLAYBACK SETTING SCREENS

Overview of the Playback Setting Screens

PAGE 1



① **Playback method setting (page 93)**
- Select continuous playback or single-frame playback.

② **Multi-playback (page 49)**
- Display images in the 9-frame multi-display format.

③ **Playback volume control (page 94)**
- Adjust the playback volume for video clips and audio data.

④ **Data protect setting (page 95)**
- Protect data from accidental erasure.

⑤ **Erase (page 97)**
- Delete images from the card memory.

⑥ **Option icon (page 118)**
- Display the Option Screen.

⑦ **PAGE display (page 90)**

⑧ **HELP display (page 89)**

⑨ **Remaining battery power (page 149)**

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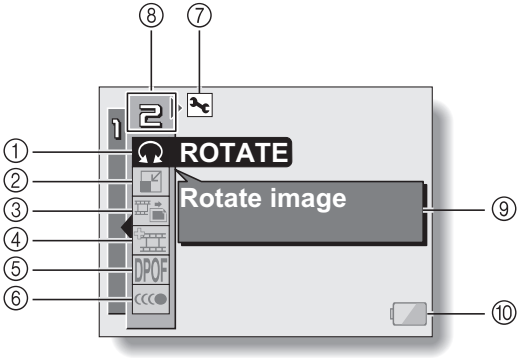
PAGE 2



① **Rotate image (page 99)**
- Rotate still images.

② **Resize (page 100)**
- Reduce the resolution of a still image.

③ **Extract still image (page 101)**
- Extract a still image from a video clip.

④ **Video clip edit (page 102)**
- Edit video clips.

⑤ **Printing instructions (page 110)**
- Specify the printing instructions (DPOF settings).

⑥ **Smooth playback (page 116)**
- Video clips are played back smoothly.

⑦ **Option icon (page 118)**
- Display the Option Screen.

⑧ **PAGE display (page 90)**

⑨ **HELP display (page 89)**

⑩ **Remaining battery power (page 149)**

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PLAYBACK MODE

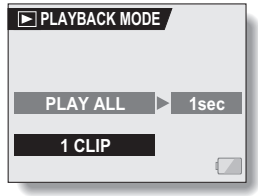
Images can be viewed continuously (slideshow playback) or you can choose to show single images.

1 **Display the PAGE 1 Playback Setting Screen (page 89).**

2 **Select the playback method icon [▶], and press the SET button.**

- The Playback Method Screen appears.

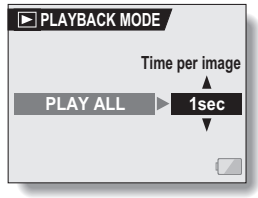
PLAY ALL: Play back images in slideshow fashion.
1 CLIP: Display only the selected image (pages 43 and 48).



3 **Select the desired playback mode.**
<When PLAY ALL is selected>

- The screen to set the time that each image is displayed appears.

① Toggle the SET button to the right to select playback time.
② Toggle the SET button up or down to specify the time that each image is shown.
③ Press the SET button.



4 **Press the SET button.**

- The display time is set, and you are returned to the Playback Setting Screen.

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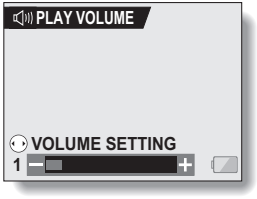
PLAYBACK VOLUME

Adjust the playback volume for video clips and audio data.

1 **Display the PAGE 1 Playback Setting Screen (page 89).**

2 **Select the playback volume icon [🔊], and press the SET button.**
- The volume control bar appears.

3 **Toggle the SET button left or right to adjust the volume, and press the SET button.**
- The volume is set, and you are returned to the Playback Setting Screen.



HINT
- During video clip or audio memo playback, if you move the zoom switch, the volume control bar will appear, allowing you to adjust the volume.

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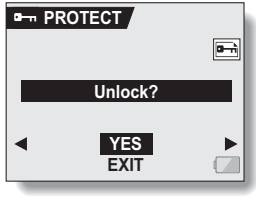
IMAGE PROTECT

Prevent accidental erasure of image and audio data.

1 **Display the data that you want to protect from accidental erasure, and display the PAGE 1 Playback Setting Screen (page 89).**

2 **Select the protect icon [🔑], and press the SET button.**
- "Lock?" appears.
- If the protect mode has already been enabled for the data, then "Unlock?" appears.

3 **Toggle the SET button up or down to select "YES", and press the SET button.**
- The protect mode is set for the data.
- The protect mark [🔑] indicates that the data is locked.
- To return to the Playback Setting Screen, press the MENU button.



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CAUTION

- Even if the protect mode is set for certain data files, they will be erased if the card is reformatted (page 144).

HINT

To select a different image in steps 2 and 3...

- Toggle the SET button to the left or right.

To cancel the protect mode for an image...

- Display the desired data and repeat steps **1** to **3**. The protect mark will disappear and the protect mode is canceled.

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ERASING DATA

Data can be erased one at a time or all at once.

1 **Display the PAGE 1 Playback Setting Screen (page 89).**

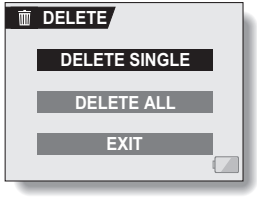
2 **Select the erase icon [🗑], and press the SET button.**

- The Erase Mode Screen appears.

DELETE SINGLE: Erases one data at a time.

DELETE ALL: Erases all the data from the card.

EXIT: Returns to the Playback Setting Screen.



3 **Toggle the SET button up or down the select the erase mode, and press the SET button.**

- The Erase Confirmation Screen appears.

<DELETE SINGLE>

- Toggle the SET button to the left or right to select the data you wish to erase.

<DELETE ALL>

- Toggle the SET button to the left or right confirm that all data are to be erased.

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4 **Select “YES”, and press the SET button.**

<DELETE SINGLE>

- The currently displayed image is deleted.
- To erase other data, select the data, and press the SET button.
- To return to the Playback Setting Screen, press the MENU button.

<DELETE ALL>

- The Erase Confirmation Screen again appears. To erase the data, select “YES”, and press the SET button. When data erase is completed, “NO IMAGE” is shown.

CAUTION

- Data which is protected from accidental erase cannot be erased. To erase protected data, set the protect setting for the data to off (page 95), and then follow the data erase procedure.

HINT

- You can also access the One Erase Confirmation Screen from the Playback Screen by toggling the SET button up.

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ROTATE IMAGE

Captured still images can be rotated to the correct orientation for viewing.

1 **Display the still image you wish to rotate, and display the PAGE 2 Playback Setting Screen (page 89).**

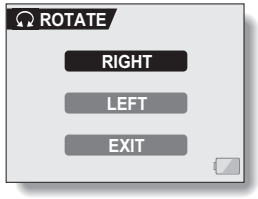
2 **Select the rotate icon [↻], and press the SET button.**

- The Rotate Image Screen appears.

RIGHT: Rotates image clockwise 90 degrees.

LEFT: Rotates image counterclockwise 90 degrees.

EXIT: Return to the Playback Setting Screen.



3 **Select "RIGHT" or "LEFT", and press the SET button.**

- Each time the SET button is pressed, the image is rotated another 90 degrees.

HINT

- An image for which the protect mode has been enabled cannot be rotated. To rotate a protected image, cancel the protect mode before beginning the rotate image procedure (page 95).

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CHANGING IMAGE SIZE (RESIZE)

A captured image can be resized to a smaller size and saved as a separate image.

1 **Display the still image whose size you want to change, and display the PAGE 2 Playback Setting Screen (page 89).**

2 **Select the resize icon [⧉], and press the SET button.**
- The Resize Screen appears.

3 **Toggle the SET button up or down to select the new image size.**

2M (1600 × 1200):	The saved image will be 1,600 × 1,200 pixels.
1.2M (1280 × 960):	The saved image will be 1,280 × 960 pixels.
0.3M (640 × 480):	The saved image will be 640 × 480 pixels.
EXIT:	Return to the Playback Setting Screen.

4 **Press the SET button.**
- Resizing begins.

HINT

Why can't the image be resized?

- An image can be resized only to a smaller (or the same) size, not to a larger size. An image captured at resolution [16:9] cannot be resized.

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EXTRACTING A STILL IMAGE FROM A VIDEO CLIP

You can select one image (scene) from a video clip, copy it, and save it as a still image (the original data remains unchanged).

1 **Play back a video clip, and pause at the point you wish to copy and save.**

2 **Display the PAGE 2 Playback Setting Screen (page 89).**

3 **Select the extract still icon , and press the SET button.**

- The screen to extract an image appears.

[4:3]: The currently displayed image will be saved as a still image with an aspect ratio of 4:3.

[16:9]: The currently displayed image will be saved as a still image with an aspect ratio of 16:9. (This selection is available only for video clips recorded in the HD mode.)

EXIT: You are returned to the Playback Setting Screen.

4 **Select "YES" and press the SET button.**

- The image is extracted.

HINT

When an image from a video clip recorded in the HD mode is saved with an aspect ratio of 4:3…

- The still image that is generated will be a 4:3 (640 × 480 pixels) VGA image with black bars at the top and bottom of a 640 × 360-pixel picture.

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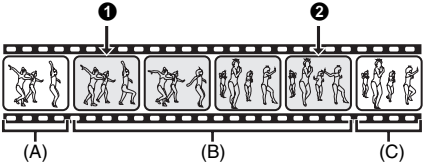
EDITING VIDEO CLIPS

You can trim away unwanted portions from a video clip and save it as a new video clip (video clip cutting [extracting]). You can also join two video clips together and save them as one separate clip ("joining").

Procedure to cut (extract) a portion of a video clip

Specify the frames (❶, ❷) where the video clip is to be cut.



▼

Extract the specified portion.

[Two ways to cut the video clip]

- Trim away portions (A) and (C), and save portion (B). ••

- Delete portion (B), and join portions (A) and (C). ••

- The original video clip is not affected ••

(You can also choose to erase the original video clip when the new clip is saved.)

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EDITING VIDEO CLIPS

Procedure to join video clips

Specify the video clip that will come first.

▼

Specify the video clip that you wish to append (join).

▼

Join the video clips.

- The two video clips are saved together as a separate video clip.

- The original video clips are not affected. (You can also choose to erase the original video clips when the new clip is saved.)

CAUTION

Caution when editing video clips

- When editing video clips, do not move the main switch. If you move the main switch while editing video clips, not only will the editing not be properly completed, but the original video clip may also be erased.
- As the number or size of the video clips increases, the card memory may become full, making it impossible to edit the video clips. In this case, you will need to free some of the memory on the card, either by deleting data that are no longer necessary (page 97), or by selecting “OVERWRITE” when saving edited video clips (pages 106 and 108).

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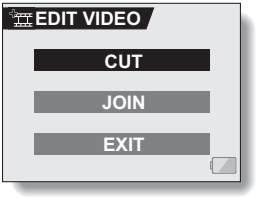
Video clip cutting (extracting)

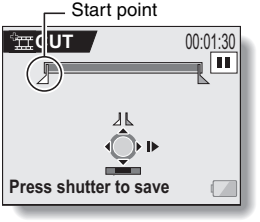
1 **Display the video clip from which you wish to extract a segment.**

2 **Display the PAGE 2 Playback Setting Screen (page 89).**

3 **Select the edit video icon , and press the SET button.**
- The Edit Video Screen appears.



4 **Select “CUT” and press the SET button.**
- The Cutting Screen appears.



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5 **Specify the start point of the extract.**

- Use the procedure below to specify the frame from which the video clip extract will start.
- Play the video clip until approximately the desired point, pause the video clip, then play the video clip one frame at a time, stopping at the start point of the extract. This will be the first frame of the extract.
- If the start point of the video clip is also the start point of the extract, proceed to step **6**.

<Procedure>

Play:
After pausing playback, press and hold the SET button to the right for about 2 seconds for forward playback, or to the left for reverse playback.

Pause:
During playback, press the SET button.

Accelerated playback:
During playback, toggle the SET button to the left or right to change the playback speed.

Single frame:
After pausing playback, toggle the SET button to the right to move forward one frame, or to the left to move back one frame.

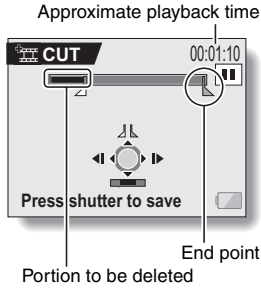
6 **Toggle the SET button up.**

- The start point of the video clip extract is set, and the screen to specify the end point appears.
- Specify the end point of the extract by following the same procedure as in step **5**.

<When joining the first and latter portions>

① Toggle the SET button down.
- The portion to be deleted switches to the extracted portion.
- Each time the SET button is toggled down, the sections to delete and the sections to save are reversed.

② Specify the end point of the extract. The frame following the end point of the extract will be the start point of the latter portion to be joined.



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7 **Press the still image shooting button [📷].**

- A screen appears for you to select either to save the edited video clip as a new (separate) file, or to delete the original video clip and replace it with the edited video clip.

SAVE AS NEW:
The edited video clip will be saved as a new file. The original video clip remains unchanged.

OVERWRITE FILE:
The original video clip will be deleted. Only the edited video clip will be saved.

REVIEW CLIP:
Play back the edited video clip before saving it.

8 **Select the desired option, and press the SET button.**

- Editing starts.
- When editing ends, you are returned to the Playback Setting Screen.

HINT

- If the original video clip is protected, even if you select “OVERWRITE FILE” in steps **8** and press the SET button, the original video clip will not be erased. If you want it to be erased, you will need to first remove the protection (page 95).
- If the “Card full” message appears, you will need to free some of the memory by deleting data that you do not need to keep.

CAUTION

Warning concerning the battery pack remaining charge

- During the editing of lengthy video clips, the time to process the large amount of data can become quite long. To avoid problems caused by the battery pack becoming depleted in the middle of video clip editing, before starting to edit be sure that a sufficiently charged battery pack is installed in the camera, or connect the AC adaptor.
- It is recommended that a computer be used to edit long video clips.

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EDITING VIDEO CLIPS

Joining two video clips

CAUTION

- Video clips that were photographed in different modes cannot be joined.

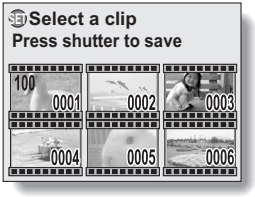
1 **Display the PAGE 2 Playback Setting Screen (page 89).**

2 **Select the edit video icon [ ], and press the SET button.**

- The Edit Video Screen appears.

3 **Select "JOIN" and press the SET button.**

- The 6-image playback display for video clips appears.



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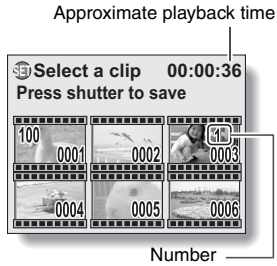
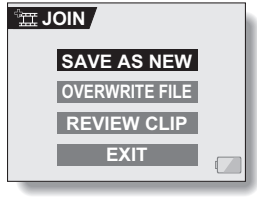
4 **Move the orange frame to the video clip you wish to join, and press the SET button.**

- The specified video clip is labeled with a number.
- Up to 9 video clips can be selected.
- To cancel a selection and remove the number label from a video clip, select the video clip and press the SET button.



5 **Press the still image shooting button [ ].**

- A screen appears for you to select either to save the joined video clip as a new (separate) file, or to delete the original video clips and replace them with the joined video clip.



SAVE AS NEW:
The joined video clip will be saved as a new file. The original video clips remain unchanged.

OVERWRITE FILE:
The original video clips will be deleted. Only the joined video clip will be saved.

REVIEW CLIP:
Play back the joined video clip before saving it.

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6 **Select the desired option, and press the SET button.**
- Editing starts.
- When editing ends, you are returned to the Playback Setting Screen.

HINT
- If the original video clip is protected, even if you select “OVERWRITE FILE” in steps **7** and press the SET button, the original video clip will not be erased. If you want it to be erased, you will need to first remove the protection (page 95).
- If the “Card full” message appears, you will need to free some of the memory by deleting data that you do not need to keep.

CAUTION
Warning concerning the battery pack remaining charge
- During the editing of lengthy video clips, the time to process the large amount of data can become quite long. To avoid problems caused by the battery pack becoming depleted in the middle of video clip editing, before starting to edit be sure that a sufficiently charged battery pack is installed in the camera, or connect the AC adaptor.
- It is recommended that a computer be used to edit long video clips.

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PRINT SETTINGS

In addition to using your printer to print out still images captured with your camera, as with conventional film, you can have prints made at shops offering digital print services. Moreover, this camera is DPOF-compatible, so you can use the camera to specify the number of prints, whether or not the date is displayed on the print, and also to specify an index print.

Display the Printing Instructions Screen

1 **Display the PAGE 2 Playback Setting Screen (page 89).**

2 **Select the printing instructions icon DPOF, and press the SET button.**

- The Printing Instructions Screen appears.

ALL IMAGES:
The specified print settings apply to all the still images on the card.

EACH IMAGE:
The print settings are specified for each individual image.

INDEX:
All the still images are printed as miniature images (thumbnail images), several images on one print.

ALL CLEAR:
Clear all the print settings. This cannot be selected if no print settings have been made for the image.

EXIT:
Return to the Still Image Playback Setting Screen.

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HINT

Printing a single frame from a video clip

- To print with a printer or have the digital print service shop print out a still image from a video clip, you must first save it (save frame) as a still image (page 101).

About the DPOF format

- DPOF (Digital Print Order Format) is a print order format. You can connect your camera to a DPOF-compatible printer to produce your prints. You can also set the print settings for the desired images, and then have the reserved images printed automatically (page 161).

About the finished prints

- Images that have been rotated will be printed in their original orientation.
- The quality of the print output will differ depending on the print service and printer used.

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Specifying date imprinting and print quantities

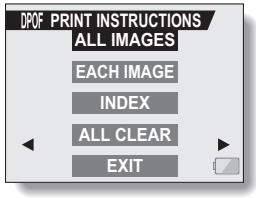
You can specify printing instructions for each individual image (EACH IMAGE), or apply the printing instructions to all the images on the card (ALL IMAGES).

1 **Display the Printing Instructions Screen (page 110).**

2 **Select EACH IMAGE or ALL IMAGES.**

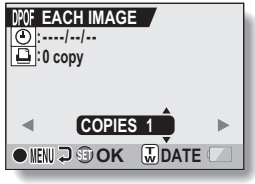
ALL IMAGES:
The printing instructions are applied to all the still images on the card.

EACH IMAGE:
The printing instructions are applied only to the image currently displayed.



3 **Press the SET button.**

- The Date/Copies Print Screen appears.
- If “EACH IMAGE” was selected, toggle the SET button to the left or right to display the desired image to print.
- The printing instructions that are currently active for the displayed image are shown. You can toggle the SET button to the left or right to confirm the printing instructions for each image.



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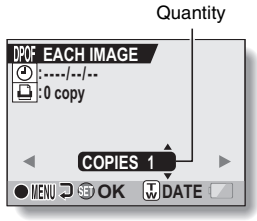
4 **Specify whether the date is displayed on the print, and the number of prints.**

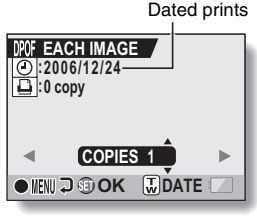
<Specify the number of prints>

- Toggle the SET button up or down.
  - The quantity indication changes.
  - Display the desired number of prints.



<Specify dated prints>

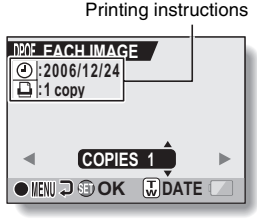
- Push the zoom switch toward the [T] or [W] side.
  - Each time the zoom switch is moved, the date indication is switched on or off.
  - For images that were captured when the camera's clock was not set (page 35), the date display appears as [--/--/--], and dated prints are not possible.



Dated prints:
Turn the date indication on.
Undated prints:
Turn the date indication off.

5 **Press the SET button.**

- The printing instructions for the requested print quantities and dated prints are stored.



6 **Press the MENU button.**

- The display returns to the Printing Instructions Screen.

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Index print

Printing out many small images on one sheet is called an “index print”. This is convenient for use as a list of the images you have captured.

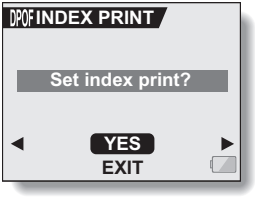
1 **Display the Printing Instructions Screen (page 110).**

2 **Select “INDEX”.**

3 **Press the SET button.**

- The Index Print Screen appears.

YES:
Specify an index print copy.
EXIT:
Discontinue the setting procedure, and return to the Printing Instructions Screen.



4 **Select “YES”, and press the SET button.**

- This completes the setting for the index print. You are returned to the Printing Instructions Screen.

HINT

To cancel the index print setting

- Follow steps **1** and **2**, select “YES” in step **3**, and press the SET button.

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Clearing all the printing instructions

Delete the printing instructions for all images.

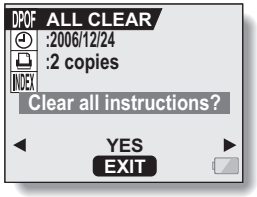
1 **Display the Printing Instructions Screen (page 110).**

2 **Select “ALL CLEAR”.**

3 **Press the SET button.**
- The Confirm All Clear Screen appears.

YES:
Clear the printing instructions for all images.
EXIT:
Cancel the clear procedure and return to the Printing Instructions Screen.

4 **Select “YES”, and press the SET button.**
- All the printing instructions are cleared and you are returned to the Printing Instructions Screen.



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SMOOTH PLAYBACK

Suppress the video flicker that occurs, for example, when playing back video clips that were recorded with camera moving fast.

1 **Display the PAGE 2 Playback Setting Screen (page 89).**

2 **Select the smooth playback icon, and press the SET button.**
- The Smooth Playback Screen appears.

ON:
Activate smooth playback
OFF:
Deactivate smooth playback

3 **Select “ON”, and press the SET button.**
- This completes the smooth playback setting.

HINT
- Depending on the recording conditions, the smooth playback effect may be insignificant in some cases.
- This feature does not work for video clips that were recorded in the HD mode.
- This feature does not work when the dedicated component cable is connected to the TV for playback.

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DISPLAYING IMAGE PROPERTIES (INFORMATION SCREEN)

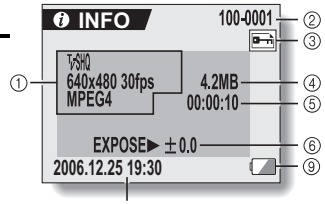
On the Information Screen you can check what the settings were when an image was captured.

1 **Display the desired image.**

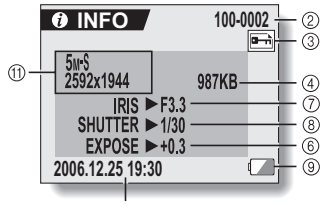
2 **Press the MENU button for at least 1 second.**

- The Information Screen appears.
- If the MENU button is pressed again, the Information Screen is canceled.

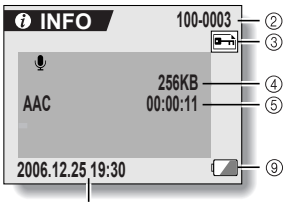
① **Video clip mode settings**
② **Image or sound number**
③ **Protect setting**
④ **File size**
⑤ **Shooting or recording time**
⑥ **Exposure correction setting**
⑦ **Aperture value**
⑧ **Shutter speed**
⑨ **Remaining battery charge**
⑩ **Date and time of image**
⑪ **Still image resolution settings**



<Video clip data>



<Still image data>



<Audio data>

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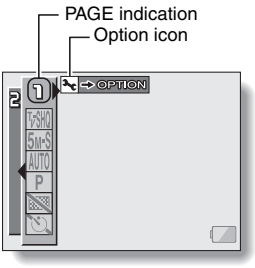
DISPLAYING THE OPTION SCREEN

The Option Screen is used to adjust various camera settings.

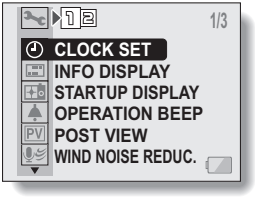
1 **Turn on the camera, and press the MENU button.**
- The Shooting or Playback Setting Screen appears.

2 **Toggle the SET button up or down to select the PAGE indication.**

3 **Toggle the SET button to the right, and select the option icon.**
- The Option Screen appears.
- The Option Screen is canceled if the MENU button is pressed.



4 **Toggle the SET button down.**
- The menu appears.



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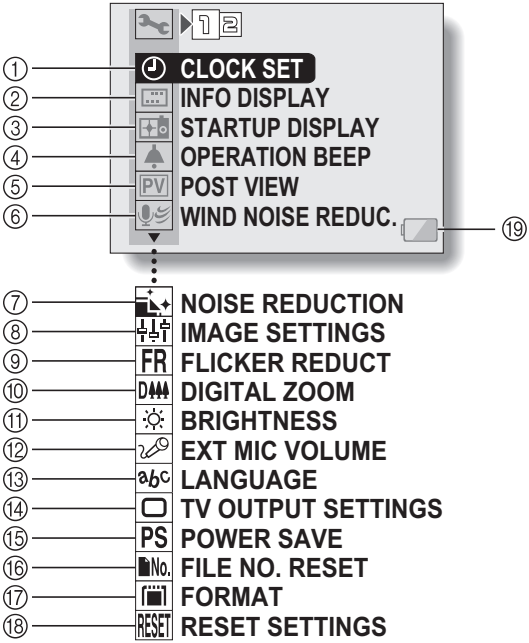
DISPLAYING THE OPTION SCREEN

Overview of the Option Screen



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① **Date and time setting (page 35)**
- Set the camera's internal clock.

② **Screen display (page 121)**
- Specify what information is displayed on the Playback Screen.

③ **Startup display (page 122)**
- Select the screen display that appears when the camera is turned on.

④ **Operation sounds setting (page 123)**
- Select the operation sounds that are produced when the camera's buttons are pressed, and adjust the operation sound volume.

⑤ **Post-view (page 125)**
- Specify how long the captured image is displayed on the monitor after the still image shooting button is pressed.

⑥ **Wind noise reduction setting (page 126)**
- Set the wind noise reduction function on or off.

⑦ **Noise-reduction (page 127)**
- Set the noise-reduction function on or off.

⑧ **Image quality adjustment (page 128)**
- Adjust the image quality during shooting.

⑨ **Flicker-reduction (page 129)**
- Set the flicker-reduction function on or off.

⑩ **Digital zoom setting (page 130)**
- Enable or disable the digital zoom.

⑪ **Monitor brightness (page 131)**
- Adjust the brightness of the monitor.

⑫ **External microphone (page 132)**
- Adjust the input level of a microphone connected to the camera.

⑬ **Screen language (page 133)**
- Select the language in which the monitor messages are displayed.

⑭ **TV output settings (page 134)**
- Select the type of video signal that is output from the camera's USB/AV terminal.

⑮ **Power save function (page 139)**

⑯ **File number reset (page 141)**
- Select the file number reset function.

⑰ **Card format (page 144)**
- Use the camera to format the memory card.

⑱ **Reset camera settings (page 146)**
- Reset the camera to the factory-preset settings.

⑲ **Remaining battery power (page 149)**

* Icons ⑦ through ⑱ are displayed when you toggle the SET button up or down to scroll.

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SCREEN DISPLAY

Specify what information is displayed on the Playback Screen.

1 **Display the Option Screen (page 118).**

2 **Select the info display icon [⌨], and press the SET button.**

- The Screen Display Screen appears.

DATE & TIME:
Set the capture-date display to ON or OFF.
COUNTER:
Set the video clip playback time display to ON or OFF.
SHOW ALL:
Display the capture date and playback time (for video clips).
OFF:
Do not display the capture date and playback time.

3 **Select the desired setting, and press the SET button.**

- This completes the screen display setting.

HINT

- During progressive output playback (page 154), the date and time, as well as the counter, are not displayed.

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SELECT THE STARTUP DISPLAY

The startup display is the display that appears on the monitor when the camera is turned on.

1 **Display the Option Screen (page 118).**

2 **Select the startup display icon , and press the SET button.**

- The Startup Display Setting Screen appears.

DATE & TIME:
The camera's date and time setting is shown.

OFF:
No startup display.

3 **Select the desired setting, and press the SET button.**

- The selected startup display is set.

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OPERATION SOUNDS

Use this menu to set the confirming audio signals when the camera is turned on/off or when the operation buttons (still image shooting button, SET button, MENU button, etc.) are pressed, to adjust the operation sound volume, and to enable/disable the audio guide.

1 **Display the Option Screen (page 118).**

2 **Select the operation beep icon [▲], and press the SET button.**

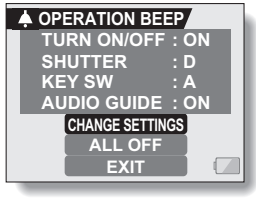
- The Operation Beep Setting Screen appears.
- The current settings are shown on the screen.
- If “ALL OFF” is selected and the SET button pressed, all the operation sounds are muted.
- If “EXIT” is selected and the SET button pressed, you are returned to the Option Screen.

TURN ON/OFF:
Mute or enable the sound that is produced when the power is turned on or off.

SHUTTER:
Select the sound that is produced when the still image shooting button is pressed, or when a photo is taken using the self-timer.

KEY SW:
Select the sound that is produced when the SET button, MENU button, etc. are pressed.

AUDIO GUIDE:
Mute or enable the camera’s audio help guide.



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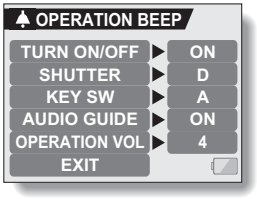
3 **Select “CHANGE SETTINGS”, and press the SET button.**

- The screen to change the settings appears.



4 **Toggle the SET button up or down to select the desired setting, and press the SET button.**

- The screen to select operation sounds appears.

<If “TURN ON/OFF” or “AUDIO GUIDE” is selected>

- The respective screen to enable or disable the sound appears.
- Toggle the SET button up or down to select the desired setting, and press the SET button.
  ON: Activates the sound.
  OFF: Deactivates the sound.

<If “SHUTTER” or “KEY SW” is selected>

- The screen to select the operation sounds appears.
- Select from 6 different sounds (A to F).
- You can press the still image shooting button to preview the selected operation sound.
- If “OFF” is selected, no sound is produced.
- Toggle the SET button up or down to select the desired setting, and press the SET button.

<If “OPERATION VOL” was selected>

- The screen to select the volume for the operation sounds appears.
- You can select an operation sound volume from 1 (minimum) to 7 (maximum).
- Toggle the SET button up or down to select the volume, and press the SET button.

5 **Select “EXIT”, and press the SET button.**

- The operation sound settings are completed.

HINT

- If you keep the MENU button pressed and turn on the power, the screen to turn the operation sounds ON/OFF appears at once. You may find this a convenient procedure to disable the operation sounds in places you do not want them to be audible.

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POST-VIEW SETTING

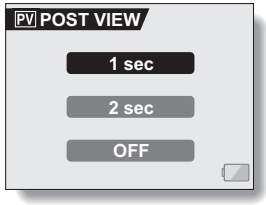
Specify the duration that the captured image appears on the monitor (post-view) after the still image shooting button is pressed.

1 **Display the Option Screen (page 118).**

2 **Select the post-view icon [PV], and press the SET button.**

- The Post-view Screen appears.

1 sec:
The post-view image is displayed for 1 second.
2 sec:
The post-view image is displayed for 2 seconds.
OFF:
The post-view image is not displayed.



3 **Select the desired setting, and press the SET button.**

- This completes the post-view setting.

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WIND NOISE REDUCTION

This feature reduces the ambient sound of the wind when you are recording a video clip or making an audio recording in a strong wind environment. Set the function to on or off.

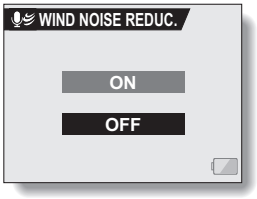
1 **Display the Option Screen (page 118).**

2 **Select the wind noise reduction icon , and press the SET button.**

- The Wind Noise Reduction Screen appears.

ON:
The wind noise reduction function is turned on.

OFF:
The wind noise reduction function is turned off.



3 **Select the desired setting, and press the SET button.**

- This completes the wind noise reduction setting.

HINT

- For normal shooting, set the wind noise reduction to “OFF”. If the function is enabled when there is no wind, the audio during shooting and recording sounds unnatural.

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NOISE-REDUCTION FUNCTION

Use this setting to minimize noise in still images and produce a clear image.

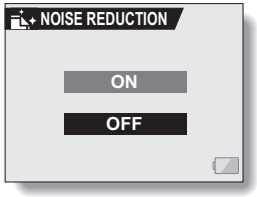
1 **Display the Option Screen (page 118).**

2 **Select the noise-reduction icon , and press the SET button.**

- The Noise Reduction Screen appears.

ON: The noise-reduction function is enabled.

OFF: The noise-reduction function is disabled.



3 **Select the desired setting, and press the SET button.**

- This completes the noise-reduction setting.

HINT

- The noise-reduction function operates when the shutter speed is slower than 1/4 second.
- Compared to normal shooting, the image processing time after shooting is slightly longer.

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ADJUST THE IMAGE QUALITY

The camera can adjust the image quality as the image is captured.

1 **Display the Option Screen (page 118).**

2 **Select the image quality icon , and press the SET button.**

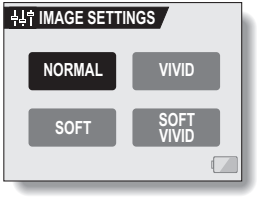
- The Image Settings Screen appears.

NORMAL: Shoot with image quality at normal.

VIVID: Color saturation is increased.

SOFT: The sharpness is subdued for a softer image.

SOFT VIVID: The sharpness is softened and color saturation is increased.



3 **Select the desired setting, and press the SET button.**

- This completes the image quality setting.

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FLICKER-REDUCTION

The flicker-reduction setting reduces the flicker that results when filming video clips under fluorescent lights and the like where the background lighting pulsates at the frequency of the power supply. The flicker-reduction setting is set to a frequency of 50 Hz.

1 **Display the Option Screen (page 118).**

2 **Select the flicker-reduction icon [FR], and press the SET button.**

- The Flicker Reduction Screen appears.

  ON: Turns on the flicker-reduction setting.

  OFF: Turns off the flicker-reduction setting.

3 **Select the desired setting, and press the SET button.**

- This completes the flicker-reduction setting.

HINT

- If the flicker-reduction setting is used outdoors on a very bright day, a halation effect, which produces diffused rings of light around bright light areas, may occur.
- The manual exposure control and flicker reduction function cannot both be enabled at the same time.
- When the flicker-reduction function is set to “ON”, the shutter speed during video clip recording is fixed at 1/50 sec.

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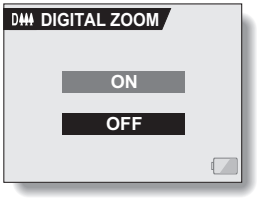
DIGITAL ZOOM SETTING

This setting allows you to specify whether or not the digital zoom is enabled during zoom shooting.

1 **Display the Option Screen (page 118).**

2 **Select the digital zoom icon [D], and press the SET button.**
- The Digital Zoom Screen appears.
  ON: Digital zoom can be used.
  OFF: Digital zoom cannot be used.



3 **Select the desired setting, and press the SET button.**
- This completes the digital zoom setting.

HINT
- The digital zoom does not function in the following situation:
  When the resolution is set to [10M].

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MONITOR BRIGHTNESS

Adjust the brightness of the camera's monitor display. Use this adjustment when the monitor image is difficult to view because of ambient lighting.

1 **Display the Option Screen (page 118).**

2 **Select the brightness icon [☼], and press the SET button.**
- The brightness control display appears.

3 **Toggle the SET button to the left or right to set the brightness, and press the SET button.**
- The monitor brightness is set.

HINT
- The display in step **2** can also be accessed from the Shooting Screen. Press the MENU button for at least 1 second; the brightness control display will appear, and you can then adjust the monitor brightness.

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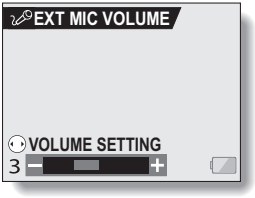
ADJUST THE VOLUME OF AN EXTERNAL MICROPHONE

The input level of a microphone connected to the camera can be adjusted.

1 **Display the Option Screen (page 118).**

2 **Select the external microphone volume icon , and press the SET button.**
- The volume adjustment bar appears.



3 **Toggle the SET button to the left or right to adjust the input level, and press the SET button.**
- This completes the input level setting for the external microphone.

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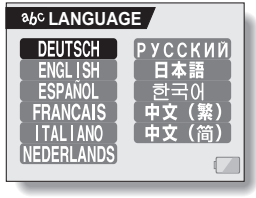
SCREEN LANGUAGE

You can set the monitor of your camera to display the messages in any one of several languages.

1 **Display the Option Screen (page 118).**

2 **Select the language icon abc, and press the SET button.**

- The Language Screen appears.



DEUTSCH:	German
ENGLISH:	English
ESPAÑOL:	Spanish
FRANCAIS:	French
ITALIANO:	Italian
NEDERLANDS:	Dutch
РУССКИЙ:	Russian
日本語:	Japanese
한국어:	Korean
中文(繁):	Chinese (traditional)
中文(简):	Chinese (simplified)

3 **Select the desired language, and press the SET button.**

- The selected display language is set.

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TV OUTPUT SETTING

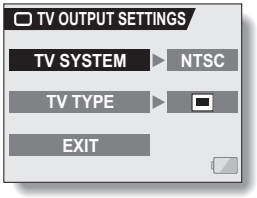
Specify the type of image signal that is output from your camera's USB/AV terminal or COMPONENT terminal.

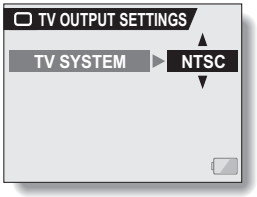
1 **Display the Option Screen (page 118).**

2 **Select the TV output settings icon [▭], and press the SET button.**

- The TV Output Setting Screen appears.

TV SYSTEM:
Set the type of TV signal that is output from the USB/AV terminal.
TV TYPE:
Set the TV's aspect ratio.
EXIT:
Return to the Option Screen.





<Example: When TV SYSTEM was selected>

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TV OUTPUT SETTING

3 **Select the desired setting, and press the SET button.**

- The screen to change the parameter for the selected setting appears.

<If "TV SYSTEM" is selected>

NTSC: Outputs NTSC video signals.

PAL: Outputs PAL video signals.

<If "TV TYPE" is selected>

: Images recorded in the HD mode with an aspect ratio of 16:9 are reproduced with an aspect ratio of 4:3 (letterbox format) with black bars at the top and bottom of the picture.

: Images recorded in the HD mode with an aspect ratio of 16:9 are vertically compressed (squeeze format) to produce a picture having an aspect ratio of 4:3.

4 **Toggle the SET button up or down to select the desired parameter.**

5 **Press the SET button.**

6 **Select "EXIT", and press the SET button.**

- This completes the TV output setting.

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■ **Relation between “TV TYPE” setting and TV display**

The tables below show the video signal that is output when the “TV TYPE” setting is changed. However, note that for some TVs that have an auto-detect function, the output may not conform to the table, or the TV display may not change at all.

“TV TYPE” setting	TV type to be connected	Image data to be displayed	TV display
	16:9	Still image	
		Video clip in normal mode	
		Video clip in HD mode	
	4:3	Still image	
		Video clip in normal mode	
		Video clip in HD mode	

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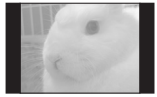
TV OUTPUT SETTING

"TV TYPE" setting	TV type to be connected	Image data to be displayed	TV display
	16:9	Still image	
		Video clip in normal mode	
		Video clip in HD mode	
	4:3	Still image	
		Video clip in normal mode	
		Video clip in HD mode	The image is stretched vertically.

* The still image examples are for images captured with the still image mode set to a setting other than 16:9.

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CAUTION

If the TV display is not correct…

- If the appearance of the image on the TV monitor is not correct, you can either change the camera's "TV TYPE" setting, or change the screen size setting on your TV. To change the screen size setting on your TV, please refer to the instruction manual for your TV.

When the aspect ratio of the output still image won't be 16:9…

- The still image output will be 4:3 for images captured with the still image mode set to a setting other than 16:9.

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POWER SAVE FUNCTION

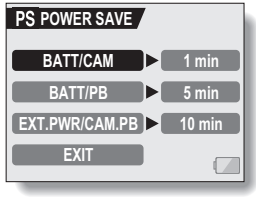
Your camera has a “power save” function whereby the power automatically turns off after a specified period of inactivity. The power save function works to conserve the battery pack power when the camera is not being used, or to prevent the battery pack from dying if the camera has accidentally been left on. You can specify the elapsed time (standby time) before the power save function is activated.

1 **Display the Option Screen (page 118).**

2 **Select the power save icon [PS], and press the SET button.**

- The Power Save Setting Screen appears.

BATT/CAM:
Set the standby time for the shooting modes when the battery pack is used.
BATT/PB:
Set the standby time for the playback modes when the battery pack is used.
EXT.PWR/CAM.PB:
Set the standby time for the shooting and playback modes when using an AC power source.
EXIT:
Return to the Option Screen.



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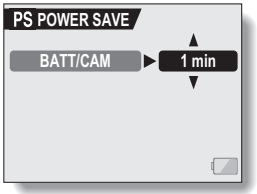
3 **Select the desired option, and press the SET button.**
- The Set Standby Time Screen appears.

4 **Toggle the SET button up or down to set the standby time.**
Up:
Increases the standby time.
Down:
Decreases the standby time.

5 **Press the SET button.**
- The standby time is set.

6 **Select "EXIT", and press the SET button.**
- You are returned to the Option Screen.



<Example: When "BATT/CAM" is selected>

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FILE NO. RESET FUNCTION

If a newly formatted card is used, the file name (image number) of the captured image automatically begins from 0001. If the card is subsequently reformatted, or if a different reformatted card is used, the file names again begin from 0001. This is because the file number reset function is set to “ON”, and consequently it results in more than one card containing images with the same numbers. By setting the file number reset function to “OFF”, even if the card is reformatted or the card is replaced with another card, the consecutive numbering of file names continues from the last number recorded by the camera.

<File number reset function “ON”>

	File name (image number)
Card A	0001, 0002 ..... 0012, 0013

⋮
Replace card
▼

Card B	0001, 0002 ..... 0012, 0013

<File number reset function “OFF”>

	File name (image number)
Card A	0001, 0002 ..... 0012, 0013

⋮
Replace card
▼

Card B	0014, 0015 .....0025, 0026

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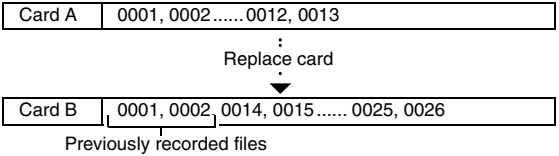
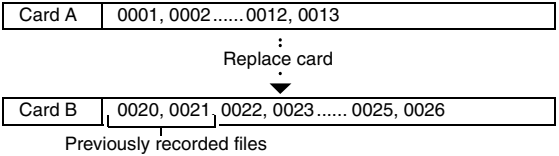
- If Card B already has image data in it when it replaces Card A, file numbers are assigned as follows.

  When the highest file number on Card B (before replacing) is lower than the highest file number on Card A: the file number of the next recorded image continues from last file number recorded on Card A.



  When the highest file number on Card B (before replacing) is higher than the highest file number on Card A: the file number of the next recorded image continues from last file number recorded on Card B.



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FILE NO. RESET FUNCTION

1 **Display the Option Screen (page 118).**

2 **Select the file number reset icon [No.].**

3 **Press the SET button.**
- The File Number Reset Screen appears.

ON:
The file number reset function is “ON”.
OFF:
The file number reset function is “OFF”.

4 **Select “OFF”, and press the SET button.**
- The file number reset function is deactivated.

HINT
- Until the file number reset function is turned “ON”, consecutive file names are assigned. It is recommended that the file number reset function be returned to “ON” at the end of each photography session.

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FORMATTING A CARD

A card must be formatted with this camera:
- After purchasing, when used for the first time, or
- If it was formatted using a personal computer or another digital camera.

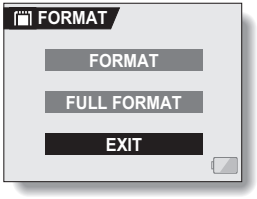
The card cannot be formatted if the lock switch is set to the “LOCK” position. Proceed with the format procedure after setting the lock switch to the unlocked position.

1 **Display the Option Screen (page 118).**

2 **Select the format icon [▣], and press the SET button.**
- The Format Screen appears.
- In normal use, a full format is not necessary. However, in case a card error occurs even after normal formatting, executing a full format may resolve the problem.

FORMAT:
A normal formatting is executed.

FULL FORMAT:
The entire card is scanned and formatted. (When there is little battery power remaining, this setting cannot be selected.)



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FORMATTING A CARD

3 **Select the desired format option, and press the SET button.**
- A confirmation screen appears.

4 **Select “YES”, and press the SET button.**
- Formatting begins.
- During formatting, “Formatting” and “do not power off” are shown on the monitor.

CAUTION

Caution during formatting
- Do not turn off the power to the camera or eject the card during formatting.

Formatting erases the data
- When a card is formatted, all data recorded on the card is erased. Protected data (page 95) is also erased, so before formatting a card, any data you want to keep should be copied to your personal computer’s hard disk or other storage medium.

Caution regarding disposing/transferring the card (recovering data from a reformatted card)
- If a card is reformatted or the data is erased from the card using the camera or a computer, the card’s control data may be merely modified and the data itself may not be completely erased from the card.
- In some cases it may be possible to recover the data from a reformatted card using special software for that purpose. However, if the camera is used to execute a full format, it will be impossible to recover the data even by the use of data recovery software.
- If you are disposing of a card, it is recommended that you physically destroy it. If you are transferring the card to someone else to use, it is recommended that you use the camera’s full format function to reformat the card, or use commercially available software for erasing card data. Managing data is the responsibility of the user.

HINT

To cancel formatting
- In step **4**, select “NO”, and press the SET button.

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RESETTING THE CAMERA SETTINGS

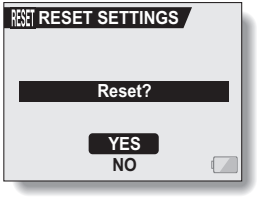
Reset the camera to the factory-preset settings.

1 **Display the Option Screen (page 118).**

2 **Select the reset settings icon [RESET], and press the SET button.**

- The Reset Settings Screen appears.

YES:
Reset to the factory-preset settings.
NO:
Do not change the settings, and return to the Option Screen.



3 **Select "YES", and press the SET button.**

- The camera settings are reset to the factory-preset settings.

HINT

- Note that the following settings do not change with this procedure:
  Date and time setting
  Language setting
  TV system setting

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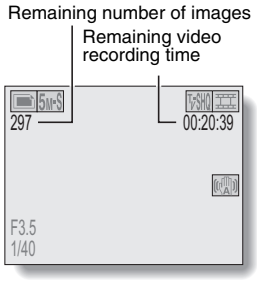
CHECKING THE REMAINING CARD MEMORY

You can check how many images can be captured and how much recording time is available on the card. For a table showing the maximum number of images and recording time for specific cards, please see “Possible No. of Images/Possible Shooting Time/Possible Recording Time” on page 189.

Checking the remaining number of images and video recording time

1 **Set the main switch to REC, and turn on the camera (page 30).**

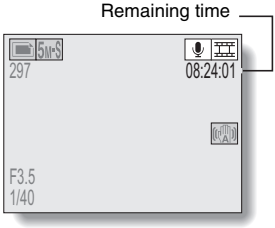
- The remaining number of images appears in the upper left of the monitor.
- The remaining video recording time appears in the upper right of the monitor.
- The remaining number of images and video recording time will differ depending on the resolution and compression settings.



For audio recordings

1 **Set the camera to the audio recording mode (page 56).**

- The remaining audio recording time is shown.



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HINT

- When the remaining number of images or the remaining video recording time is “0”, you cannot capture any more images. To capture more images, either install a new card, or save the images to a computer and then erase them (page 97) from the card.
- When the remaining number of images or the remaining video recording time is “0”, it may be possible to capture a few more images by setting a lower resolution setting (pages 71 and 72), or selecting a different image quality setting.

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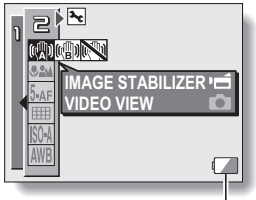
CHECKING THE REMAINING BATTERY PACK CHARGE

When using the battery pack, the remaining battery pack charge can be checked on the monitor. Make sure to check this indicator before capturing an image. For an indication of the possible length of time for battery pack operation, see page 188.

1 **Display a Shooting or Playback Setting Screen (pages 65 and 89).**

- The battery pack remaining charge indicator appears in the lower right corner of the monitor.
- Due to the battery pack characteristics, when the ambient temperature is low, may appear early for an incorrect indication of the remaining charge. Also, depending on the conditions of use of the camera or the ambient conditions (temperature, etc.), the indicated remaining charge may change. Therefore, this indication can only be used as a general approximation of the remaining charge.



Battery pack remaining charge indicator

Battery pack remaining charge indicator	Battery remaining charge
No indication, or	Approx. full.
	Power is low.
	It will soon be impossible to capture or play back images.
	If this icon flashes when the still image shooting button or video clip recording button is pressed, images cannot be captured. Recharge the battery pack.

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HINT

- If any data is present, you can also check the remaining battery pack charge on the Information Screen (page 117).
- Battery life may differ even among battery packs of the same type.
- Depending on the usage of the camera (such as the number of times the flash is used, the use of the monitor, etc.) or the ambient temperature (temperatures below 10°C [50°F]) the number of images that can be saved on a fully charged battery pack will vary greatly.
- It is recommended that you prepare an extra battery pack(s) when taking pictures at a wedding or while traveling, for example, so you don't miss capturing images of important moments due to the battery pack power running out. The same is recommended for taking photos in cold environments. (In a ski area, for example, the battery pack can be kept warm in your pocket until ready to use.)

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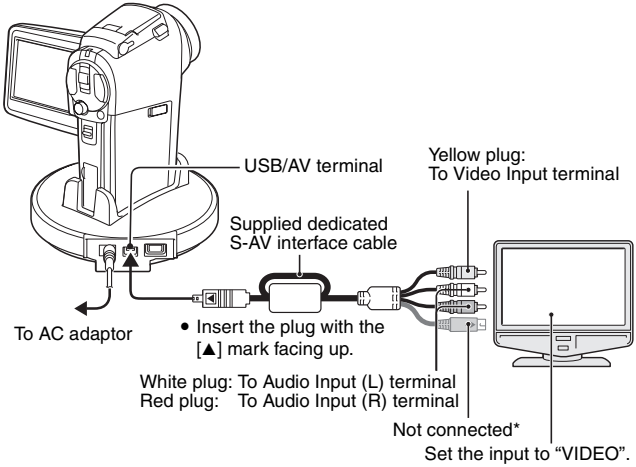
CONNECTING TO A TV

Connect the camera to the TV.

How to connect

- Connect the USB/AV terminal or COMPONENT terminal to the AUDIO and VIDEO input terminals on the TV.
- When the camera's monitor unit is closed and the camera is set in the docking station, press the operation mode button [ ] on the docking station.

<When connecting to a standard video input terminal>


USB/AV terminal
Yellow plug:
To Video Input terminal
Supplied dedicated
S-AV interface cable
To AC adaptor
• Insert the plug with the [▲] mark facing up.
White plug: To Audio Input (L) terminal
Red plug: To Audio Input (R) terminal
Not connected*
Set the input to "VIDEO".

* When connected, the images are not produced normally on the TV monitor.

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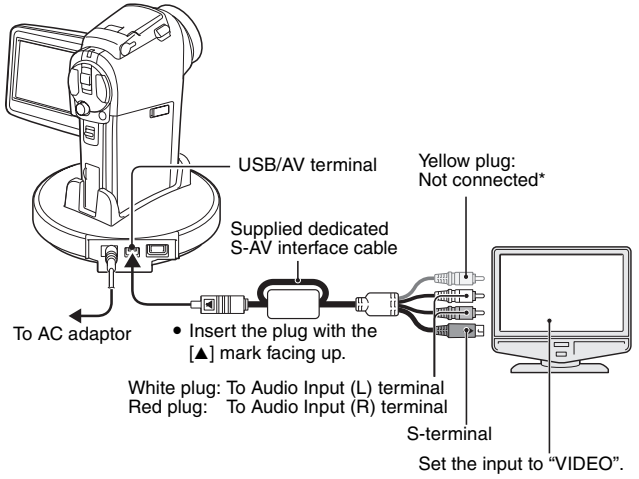
<When connecting to an S-VIDEO input terminal>



* When connected, the images are not produced normally on the TV monitor.

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CONNECTING TO A TV

Playback

- After connecting the camera to the television, set the TV input switch to VIDEO input.
- When an S-AV interface cable is connected, no image appears on the camera's monitor.
- The playback method is the same as when viewing images on the camera's monitor.
  Audio playback: see page 58
- The remote control unit can be used for playback (page 59).
- The same playback procedure as when playing back with the camera is used to play back audio recordings as well.

CAUTION

Insert and pull out the cable carefully

- When connecting the cables, make sure that the cable plugs are correctly oriented and that they match the shapes of the terminal sockets on the devices. Push the plugs in straight when connecting them. If undue force is used to connect a cable, it may permanently damage the connector pins in the terminal socket.
- Do not use excessive force when connecting and disconnecting cables.

HINT

About the display when the "PAL" TV system is selected (page 134) and the supplied S-AV interface cable is used to connect the camera to the TV

During recording: The image appears on the monitor only; it does not appear on the TV.

During playback: The image appears on the TV only; it does not appear on the monitor.

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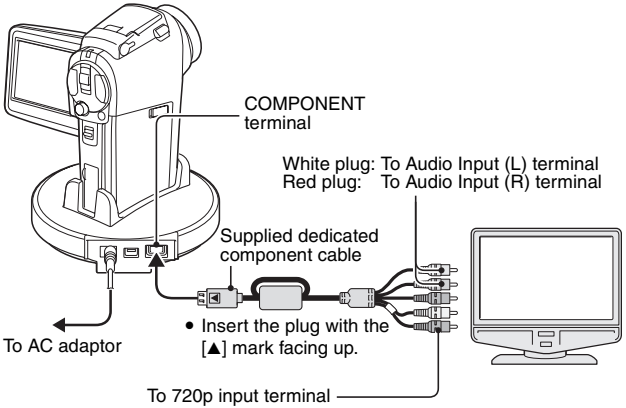
Enjoy higher image quality (progressive output)

If your TV has a 720p input terminal, you can enjoy the high video quality of progressive output from your camera.


COMPONENT terminal
White plug: To Audio Input (L) terminal
Red plug: To Audio Input (R) terminal
Supplied dedicated component cable
• Insert the plug with the [▲] mark facing up.
To AC adaptor
To 720p input terminal

During recording: The image appears on the monitor only; it does not appear on the TV.

During playback: The image appears on the TV only; it does not appear on the monitor.

*** The date and time, as well as the counter, are not displayed.**

NOTE

- Do not connect the dedicated S-AV interface cable and the dedicated component cable to the docking station at the same time. In some cases the images may not appear properly on the TV.

If your TV does not have 720p video input capability

- The images will not appear on the TV.

Camera Menu Screen and TV Menu Screen

- The Menu Screen appears only on the TV monitor, so please operate the camera while looking at the TV monitor.
- The layout of the Menu Screen as it appears on the TV is different from that on the camera.

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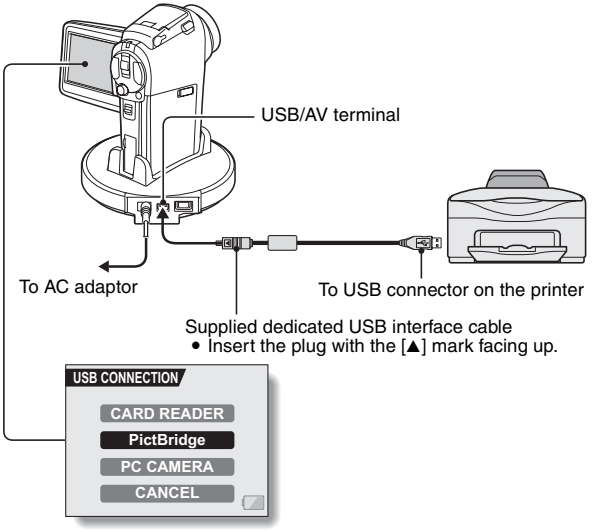
DIRECT PRINTING

Your camera supports the PictBridge function. By connecting the camera directly to a PictBridge-enabled printer, the camera's monitor can be used to select images and initiate printing (PictBridge printing).

Print preparations

1 **Install the card in the camera, open the monitor unit to turn on the camera, and turn on the printer.**

2 **Use the supplied docking station or adaptor to connect the camera to the printer.**



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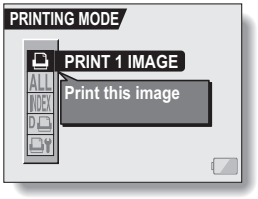
3 **Select “PictBridge”, and press the SET button.**

4 **The PictBridge printing mode is activated.**

- The camera switches to the PictBridge printing mode, and the PictBridge Screen appears.



CAUTION

Insert and pull out the cable carefully

- When connecting the cables, make sure that the cable plugs are correctly oriented and that they match the shapes of the terminal sockets on the devices. Push the plugs in straight when connecting them. If undue force is used to connect a cable, it may permanently damage the connector pins in the terminal socket.
- Do not use excessive force when connecting and disconnecting cables.

Caution when connecting a printer

- If the power to the printer is turned off while it is connected, the camera may not operate correctly. If the camera does not operate correctly, disconnect the USB interface cable, turn off the camera, and then reconnect the cable.
- During PictBridge printing, the camera’s button operation response is slower.
- If the camera is powered by the battery pack for printing, make sure that the remaining battery charge is sufficient.

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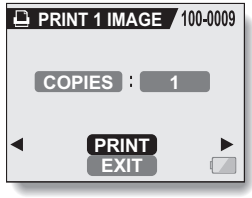
DIRECT PRINTING

To select one image and print it (one image)

Procedure to select one still image and print it.

1 **Complete the printing setup (page 155).**

2 **Select the one image icon [🖨], and press the SET button.**
- The screen to select images for printing appears.



3 **Toggle the SET button to the left or right to display the image you wish to print.**
- Specify the image to print.

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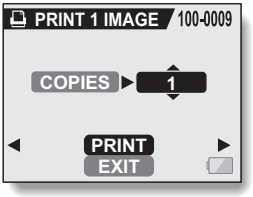
4 **Specify the number of prints.**

① Select “COPIES”, and press the SET button.

② Toggle the SET button up or down to specify the number of prints.

③ Press the SET button.

- “PRINT” is selected.



5 **Press the SET button.**

- Printing begins.

HINT

To cancel printing

① During printing, toggle the SET button down.

- The Confirm Cancel Printing Screen appears.

② Select “YES”, and press the SET button.

- If “EXIT” is selected and the SET button is pressed, printing resumes.

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DIRECT PRINTING

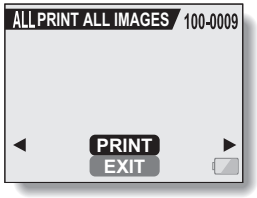
To print all the images (all images)

Print all of the images on the card.

1 **Complete the printing setup (page 155).**

2 **Select the all images icon [ALL], and press the SET button.**
- The Print All Images Screen appears.

3 **Select "PRINT", and press the SET button.**
- Printing begins.



CAUTION

Printing is not possible if there are more than 999 still images in the card.
- Delete unwanted images before printing.

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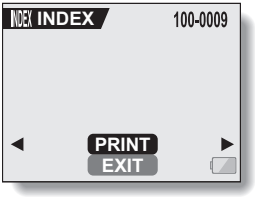
Thumbnail prints (index)

Make an index print of all the images on the card.

1 **Complete the printing setup (page 155).**

2 **Select the index print icon [INDEX], and press the SET button.**
- The Index Print Screen appears.

3 **Select "PRINT", and press the SET button.**
- Printing begins.



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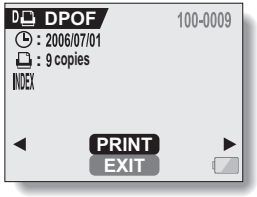
DIRECT PRINTING

To print the images that are set to print (print reserved images)

Procedure to print all the images that are set to print.

1 **Make the print settings (page 110), and complete the printing setup (page 155).**

2 **Select the DPOF icon [DPOF], and press the SET button.**
- The Print Scheduled Images Screen appears.



3 **Select "PRINT", and press the SET button.**
- Printing begins.
- Printing begins about 1 minute after the SET button is pressed.

HINT
- In step **2**, if you toggle the SET button to the left or right, you can confirm the images that are set to print and their DPOF settings.

CAUTION
- Reserved images printing [DPOF] is not possible if a printer is used that does not support your camera's DPOF function.

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To change the printer settings and print images (change printer settings)

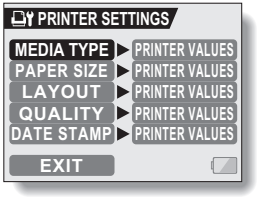
Images are printed according to settings specified by the camera, such as paper type, size, layout, printing quality, etc.

1 **Complete the printing setup (page 155).**

2 **Select the printer settings icon [🖨], and press the SET button.**

- The Printer Settings Screen appears.

MEDIA TYPE:
Specify the type of paper used for printing.
PAPER SIZE:
Specify the size of paper used for printing.
LAYOUT:
Specify how the images are to be arranged on the paper.
QUALITY:
Select the print quality for the images.
DATE STAMP:
Print the date the photo was taken.
EXIT:
Return to the PictBridge Screen.



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3 **Adjust the printer settings.**

① **Toggle the SET button up or down to select a printer setting parameter, and press the SET button.**
- The screen to set the selected parameter appears.

② **Toggle the SET button up or down to adjust the setting, and press the SET button.**
- The selected parameter is set, and you are returned to the Printer Settings Screen.
- Follow the same procedure to adjust the other parameters, as desired.
- The contents of the settings that can be made for each parameter will differ depending on the printer.

<When "PRINTER VALUES" is selected>
- The images will be printed according to the settings specified on the printer side.

4 **Select "EXIT", and press the SET button.**
- You are returned to the Printing Mode Screen.

HINT
- The printer setting parameters will differ depending on the printer that is connected.
- To use printer functions which do not appear on your camera's Printer Settings Screen, select "PRINTER VALUE".
- If a function set by the camera is not available in the printer, the camera's printer settings will automatically change to "PRINTER VALUE".

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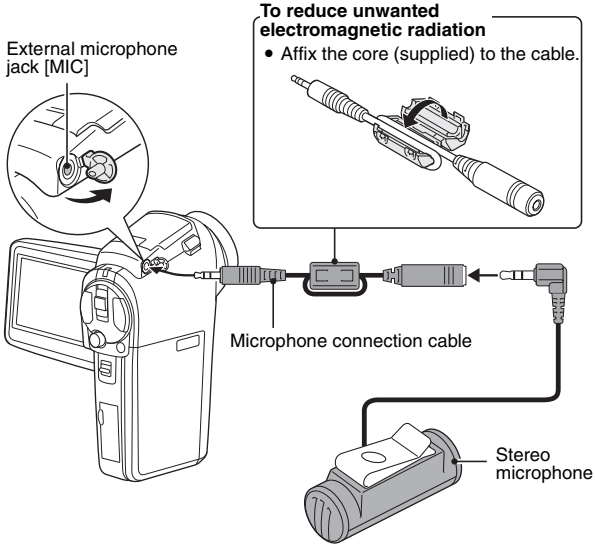
CONNECTING AN EXTERNAL MICROPHONE

A commercially sold stereo microphone can be connected to the camera.


External microphone jack [MIC]
To reduce unwanted electromagnetic radiation
• Affix the core (supplied) to the cable.
Microphone connection cable
Stereo microphone

HINT

- The input level of the connected microphone can be adjusted (page 132).
- When an external microphone is connected, the camera's stereo microphone is disabled.

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COMMONLY ASKED QUESTIONS

If you have a question about the camera operation, you might find the answer in this compilation of commonly asked questions.

	Question	Answer	Action
Power	Why doesn't the power turn on?	Due to cold temperatures, the battery pack temporarily lost its power.	Place the camera in your pocket to warm it up before using it.
	Why is the battery pack consumed so quickly even after it was fully recharged?	The ambient temperature is very low.	Keep the battery pack in an environment of 10 to 40°C (50 to 104°F).
	Why doesn't recharging end?	The battery pack life has expired.	Replace with a new battery pack. If this is not effective, consult your dealer.
	Why does the icon appear?	The remaining battery pack power is low.	Use the supplied AC adaptor, or replace the battery pack with a fully charged one.
Shooting	Why does the multi-indicator flash red?	Recorded data is being saved on the card.	Not a malfunction. Wait until the multi-indicator turns off.
	Why doesn't the flash operate?	The camera has determined that the image is bright enough and the flash is not necessary.	Not a malfunction. Capture the image; the camera will determine when the flash is necessary.

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	Question	Answer	Action
Shooting	Are the settings retained even after the camera is turned off?	—	All settings except the self-timer and the exposure correction are retained even after the camera is turned off.
	Which resolution setting should I use?	—	Select the resolution setting according to the intended use: 5M-S, 5M-H, 10M, 16:9: Appropriate for printing letter-size or larger, and for printing a close-up of part of a photo (trimming). 2M, 1.2M: For printing standard photo (photo service) sizes. 0.3M: For photos displayed on a web page, or sent as e-mail attachments.
	What is the difference between the digital zoom and the optical zoom?	—	Because shooting with the optical zoom uses the optics of a physical lens, you can shoot without losing minute details in the image. The digital zoom, on the other hand, works by magnifying a portion of the image that hits the CCD sensor and may produce a coarser image.

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COMMONLY ASKED QUESTIONS

	Question	Answer	Action
Shooting	How can I get the distant view into focus?	—	Set the scene select function to the landscape mode when photographing. Or, set the focus range setting to manual focus MF, and set the distance to ∞.
	The video clip I shot outdoors is completely white.	—	Set the flicker-reduction setting to off.
Monitor	When used in cold weather, why does the image seem to leave traces as it moves?	Condition due to the monitor characteristics.	Not a malfunction. Spots that appear in the monitor only appear in the monitor and will not be recorded with the images.
	Why does the displayed image contain some red, blue and green dots, or why are black spots visible?		
Viewing images	Why is the image too bright?	The subject was too bright.	When capturing an image, devise a way to compensate for a bright subject, for example, by changing the shooting angle.

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	Question	Answer	Action
Viewing images	Why is the image out of focus?	The focus is not locked properly.	Hold the camera correctly and slowly press the still image shooting button halfway to lock the focus. Then press the still image shooting button all the way to capture the image.
	Why is a part of the image missing?	The image was captured at close range.	When capturing an image at close range, compose the image using the monitor.
	Why is there no image ([?] is shown)?	This may happen when trying to play back images stored on a card from a different digital camera.	Play back images that were recorded on a card using this camera.
	Why do vertical stripes appear?	If a bright subject is shot in the video clip recording mode, vertical stripes may appear on the monitor or in the image.	Not a malfunction.
	Why isn't the magnified image clear?	Due to the characteristics of the camera, magnified images appear less clear.	Not a malfunction.
	Why isn't the captured image clear?	The image was captured using the digital zoom.	Not a malfunction.

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COMMONLY ASKED QUESTIONS

	Question	Answer	Action
Viewing images	Can I play back image and sound data that I edited using my computer?	—	We cannot guarantee the accurate playback of data that has been edited using a computer.
	Why is there a motor-like sound during video clip playback?	The sound of the camera's mechanical action was recorded.	Not a malfunction.
Connecting to a TV	Why is there no sound?	The volume on the TV is set to the minimum.	Adjust the volume on the TV.
		The playback volume of the camera is set to 0.	Increase the playback volume of the camera.
	What is the difference among the normal video (composite video) output, S-video output and progressive output?	—	Normal video (composite video) output: Combines Y (luminance) signal and chrominance signal and outputs the combined signal. S-video output: Outputs the Y signal and chrominance signal separately. Progressive signal: Outputs the Y signal, B-Y signal and R-Y signal separately. The picture quality becomes increasingly higher, in order from normal video output, to S-video output, to progressive output.

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	Question	Answer	Action
Connecting to a TV	Can the dedicated S-AV interface cable and the dedicated component cable connect at the same time and output the image?	—	You cannot output the image when both cables are connected at the same time. Connect only one of the cables.
	What image will appear on the TV when the dedicated component cable is connected to a TV supporting D1/480i, D2/480p or D3/1125i signals?	—	With this camera, the progressive output is available only on TVs supporting 720p signals. The image does not appear on TVs supporting D1/480i, D2/480p or D3/1125i signals.
Printing	Why does a message appear during PictBridge printing?	There is a problem with the printer.	Please refer to the instruction manual for your printer.
Misc.	The “Cannot edit video” message appears.	You have attempted to join video clips having different resolutions or frame rates.	Select video clips that have the same resolution or frame rates.
	Why is a noise heard from a nearby TV or radio during battery recharging?	Electromagnetic waves are emitted from the AC adaptor.	Move the AC adaptor further away from the TV or radio when recharging the battery pack.
	Why does the “Card full” message appear?	There is no more available memory on the card.	Erase unnecessary data, or use a card that has more memory available.

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COMMONLY ASKED QUESTIONS

	Question	Answer	Action
Misc.	Why does the “Card is protected” message appear?	The lock switch on the card is in the locked (protect) position.	Move the lock switch to the unlocked position.
	Why can’t the camera be operated?	A temporary internal circuitry problem may be the cause.	Remove the AC adaptor and the battery pack from the camera, wait a few minutes, then reinstall the battery pack and try again.
	A problem such as inability to record or play back occurs.	The card contains files that were saved using a device other than this camera.	After saving your files to a different medium, format the card.
	Can I use my camera abroad?	—	When the camera is connected to a TV, you can switch the camera’s video output to NTSC or PAL. If you have questions about using the AC adaptor and power cord abroad, please consult with a dealer near you for advice.

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	Question	Answer	Action
Misc	Why does the “System error” message appear?	A problem has occurred within the camera or card.	Check the following items: ① Remove the card and then install it again. ② Remove the battery pack and then install it again. ③ Install a different card. If “System error” still appears after performing the above steps, then take the camera to the dealer for service.

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TROUBLESHOOTING

Before taking your camera to the repair shop, check the following table for a possible solution to the problem.

CAMERA

	Problem	Cause	Action	Reference page
Power	No power.	The battery pack is dead.	Recharge the battery pack, or replace with a new battery pack. Or connect the AC adaptor (supplied).	22, 26, 29
		The battery pack has not been inserted correctly.	Reinsert the battery pack, making sure to orient it correctly.	
	The camera turns off by itself.	The power save function is operating.	Turn on the camera again.	31
Shooting	An image is not captured when the still image shooting button or video clip recording button is pressed.	The power is not turned on.	If the power save function was activated, turn on the camera before shooting. If the camera was turned off, press the ON/OFF button to turn it on.	30, 31

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	Problem	Cause	Action	Reference page
Shooting	An image is not captured when the still image shooting button or video clip recording button is pressed.	The maximum number of images that can be captured or the maximum video clip recording time has been reached.	Install a new card.	20
			Erase the images that are not necessary.	97
	The flash does not operate.	The flash off mode is selected.	Set the flash to automatic flash mode or forced flash mode.	61
		The battery pack is dead.	Recharge the battery pack, or replace with a new battery pack. Or connect the AC adaptor (supplied).	22, 26, 29
	The digital zoom does not work.	The still image mode is set to 10M. The digital zoom setting is set to “OFF”.	Set the still image mode to 5M-H. Set the digital zoom setting to “ON”.	72, 130
	A warning tone (beep-beep-beep) sounds, and it is not possible to take a picture using the self-timer.	The battery pack is consumed.	Install a sufficiently recharged battery pack. Or connect the AC adaptor (supplied).	22, 26, 29

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TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Shooting	When zooming in or out, the zoom movement stops momentarily.	The optical zoom has moved to the maximum magnification position.	Not a malfunction. Release the zoom switch, and press it again.	60
	There is noise in the captured image.	The ISO sensitivity setting is too high.	Set the ISO sensitivity to a lower setting.	83
	The ⚠ icon appears, and shooting is not possible.	The camera's internal temperature is high.	Discontinue shooting, and wait for the camera to cool down before using it again.	—
Monitor	No playback image appears.	The main switch is not set to PLAY.	Set the main switch to PLAY.	43, 48
Viewing images	The image is too dark.	The flash was blocked by a finger or other object.	Hold the camera correctly, and make sure the flash is not obstructed.	38
		The subject was too far away.	Capture the image in the range of operation of the flash.	185
		The subject was lit from behind.	Use the forced flash mode.	61
			Use the exposure correction function.	63
			Use the spot light-measuring mode.	82
		There is not enough light.	Adjust the ISO sensitivity setting.	83

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	Problem	Cause	Action	Reference page
Viewing images	The video clip picture is flickering.	The video clip was filmed under fluorescent lighting.	Set the flicker-reduction setting to on.	129
	The image is too bright.	The forced flash mode is selected.	Select a different flash mode.	61
		The subject was too bright.	Use the exposure correction function.	63
		The ISO sensitivity setting is incorrect.	Set the ISO sensitivity to [ISO-A].	83
	The image is not in focus.	The subject is too close to the camera.	Capture the image with the subject within the photographable range. Select the correct focus setting for your needs.	79
		The focus setting is not correct.		
		The camera moved when the still image shooting button was pressed. (camera shake)	Hold the camera correctly and slowly press the still image shooting button halfway to lock the focus. Then press the still image shooting button all the way to capture the image.	38, 46
		The focus is not locked properly.		
		The lens is dirty.	Clean the lens.	—

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TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Viewing images	The colors of the images captured indoors are not correct.	This is due to ambient lighting.	Capture the image using the forced flash mode.	61
		The white balance setting is incorrect.	Set the white balance setting correctly.	84
	A part of the image is missing.	The strap or a finger was blocking the lens.	Hold the camera correctly, and make sure the lens is not obstructed.	38
	"No image" is shown.	There is no data in the installed card.	Play back after capturing images or making audio recordings.	—
	During audio playback, there is no sound.	The playback volume setting on the camera is too low.	Adjust the playback volume.	94
Connecting to a TV	There is no color in the image. The image is distorted.	The TV output setting is not correct.	Select the correct TV output setting.	134
		Both the dedicated S-AV interface cable and the dedicated component cable are connected.	Make the correct connection.	154
	No image or sound.	The camera is not correctly connected to the TV.	Follow the instructions to make the connection correctly.	151
		The TV input is not set correctly.	Set the input on the TV to "VIDEO".	

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	Problem	Cause	Action	Reference page
Connecting to a TV	There is no sound.	The playback volume setting on the camera is too low.	Adjust the playback volume.	94
	The edge of the image is cut off.	This is a characteristic of the TV.	Not a malfunction.	—
Image editing	You cannot edit or rotate an image.	The protect mode is set.	Cancel the protect mode.	95
Charging	The camera is set in the docking station but the installed battery is not being recharged.	The AC adaptor is not connected to the docking station.	Check that the power cord of the AC adaptor is connected correctly.	22
		The camera is not correctly connected to the docking station.	When inserting the camera in the docking station, push down on it to make sure that the connection between the camera and the docking station is secure.	26
		The camera is in the shooting mode.	Set the camera to the playback mode or turn the camera off. Alternatively, press the docking station's operation mode button [⚡] to light the CHARGE indicator.	43, 48

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TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Misc.	The “No card” message appears.	No card is inserted.	Turn off the power and insert a card.	20
	The “Image is protected” message appears and the data cannot be erased.	You have attempted to erase data that is protected from accidental erasure.	Set the protect setting for the data to UNLOCK.	95
	The audio guide does not sound.	The audio guide setting is set to “OFF”.	Set the audio guide setting to “ON”.	123
	The recording capacity is less than that indicated in the section “Possible No. of Images/ Possible Shooting Time/ Possible Recording Time”.	The recording capacity is less than the value specified for the card.	Depending on the card, the capacity may be less than the specified value. Please refer to the instructions that accompanied the card.	189

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DOCKING STATION

	Problem	Cause	Action	Reference page
Remote control unit	The remote control unit does not seem to work.	The remote control unit is aimed at the TV (not at the camera's remote control sensor).	Aim the remote control unit at the camera's remote control sensor (within a range of about 30 degrees horizontally from the remote control sensor).	23, 24
		Something is obstructing the space between the remote control unit and the camera's remote control sensor.	Remove or move the obstructing object.	
		The remote control unit battery is consumed.	Replace with a new battery.	
		The remote control unit battery is not correctly inserted.	Take care that the (+) and (–) poles are correctly oriented.	

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TROUBLESHOOTING

	Problem	Cause	Action	Reference page
Remote control unit	The remote control unit does not seem to work.	The remote control unit is too far from the camera's remote control sensor.	Operate the remote control unit from a position up to 7 meters from the docking station.	23, 24
		The remote control codes for the remote control unit and camera's remote control sensor are different.	Change the remote control code.	25

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Notes regarding the Scene Select feature and filters

Scene Select

Setting	Remarks
Sports	Focus range: cannot be selected.
Portrait	
Landscape	
Night view portrait	
Fireworks	Focus range: Fixed at . Flash: Fixed at .
Lamp*	Still image mode: Can be set to 0.3M or 1.2M. Flash: Fixed at . Focus range: cannot be selected. Noise-reduction: Fixed at “OFF” or .

* When recording a video clip in dark surroundings, the shutter speed automatically decreases to the following values in order to produce a sufficiently bright image.
However, when the flicker-reduction function is set to “ON”, the shutter speed during video clip recording is fixed at 1/50 sec.

Video clip mode setting (page 71)	Shutter speed
30 fps	1/15 sec
60 fps	1/30 sec

Note that when playing back video clips recorded at these settings, the movement will be somewhat jerky.

Filter

Setting	Remarks
Cosmetic	Focus range: cannot be selected.
Monochrome	Still image mode: 10M cannot be selected. Focus range: cannot be selected.
Sepia	

About the scene select function and focus range settings

- The scene select function changes to AUTO when the focus range is set to .
- Even if you set the focus range to , or MF, it changes to when the scene select function is set to anything other than AUTO.

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SPECIFICATIONS

Camera

Type	Digital Movie Camera (recording and playback)
Recorded image file format	**Still images:** JPEG format (DCF, DPOF, Exif 2.2 compliant) Note: Designed mainly by the Japan Electronics and Information Technology Industries Association (JEITA), DCF (Design rule for Camera File system) is standard for digital still camera image files to provide interoperability between digital photography devices for the images stored on removable memory cards. However, it is not guaranteed that all devices will support the DCF standard. **Video clips:** Conforms to ISO-standard MPEG-4 format **Audio:** MPEG-4 audio (AAC compression) 48 kHz sampling rate, 16-bit stereo format
Data storage media	SD Memory Card (equivalent to a 4 GB SDHC memory card)
Camera effective number of pixels	Approx. 5.10 million pixels
Image sensor	1/2.5-inch (1 cm) CCD Virtual number of pixels: Approx. 5.36 million pixels, interlace scan, primary color filter
Still image shooting mode (recording resolution)	Single-shot mode only 10M: 3,680 × 2,760 pixels (standard compression) Single-shot mode or sequential shots mode 5M-H: 2,592 × 1,944 pixels (low compression) 5M-S: 2,592 × 1,944 pixels (standard compression) 16:9: 2,592 × 1,464 pixels (standard compression) 2M: 1,600 × 1,200 pixels (standard compression) 1.2M: 1,280 × 960 pixels (standard compression) 0.3M: 640 × 480 pixels (standard compression)

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Video clip recording mode (recording resolution, frame rate, bit rate)	HD mode HSHQ: 1,280 × 720 pixels, 30 fps 9 Mbps HHQ: 1,280 × 720 pixels, 30 fps 6 Mbps Normal mode SR: 640 × 480 pixels, 60 fps 6 Mbps SSHQ: 640 × 480 pixels, 30 fps 3 Mbps SHQ: 640 × 480 pixels, 30 fps 2 Mbps WSHQ: 320 × 240 pixels, 30 fps 640 Kbps WHQ: 320 × 240 pixels, 15 fps 384 Kbps * The 60 fps frame rate of this camera is 59.94 fps, the 30 fps frame rate is 29.97 fps, and the 15 fps frame rate is 14.985 fps.	
White balance	Full-auto TTL, manual setting possible	
Lens	Optical 10x zoom lens	f=6.3 mm to 63.0 mm (35 mm film camera conversion 38 mm to 380 mm) Autofocus, 9 groups, 12 elements (including three with five aspheric surfaces) Galvanometer iris Internal ND filter
Aperture	Open F=3.5 (Wide) to 3.5 (Tele) Smallest F=8.0 (Wide) to 8.0 (Tele)	
Exposure control type	Programmable AE/Shutter speed priority AE/ Aperture priority AE/Manual exposure control Exposure correction available from the Shooting Setting Screen (0±1.8EV in 0.3EV steps)	
Light-measuring mode	Multi-section measuring, center-weighted measuring, spot measuring	
Range	Total mode: 10 cm (3.94 in.) to infinity (Wide end) 1 m (3.28 ft.) to infinity (Tele end) Normal mode: 80 cm (31.50 in.) to infinity Super macro mode: 1 cm (0.39 in.) to 1 m (3.28 ft.) (Wide end only)	
Digital zoom	For shooting: 1x to approx. 10x For playback: 1x to 58x (varies with resolution)	

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SPECIFICATIONS

Shutter speed	Still image shooting mode: 1/2 to 1/2,000 sec. (Maximum approx. 4 seconds when scene select function set to lamp) (During flash: 1/30 to 1/2,000 sec.) Sequential shots mode: 1/15 to 1/2,000 second (no flash) Video clip recording mode: 1/30 to 1/10,000 sec. (1/15 sec. max.: when scene select function is set to lamp mode)
Sensitivity	Still image shooting mode: Auto (equivalent to ISO 50 to 200)/equivalent to ISO 50, ISO 100, ISO 200, and ISO 400 (switchable from Shooting Setting Screen) Video clip recording mode: Auto (equivalent to ISO 200 to 800)/equivalent to ISO 200, ISO 400, ISO 800 and ISO 1,600 (switchable from Shooting Setting Screen) * Maximum ISO sensitivity up to 1,600 equivalent when Scene Select function is set to
Minimum subject illumination	27 lux (HD mode/normal mode, 30 fps, 1/30 sec in AUTO mode) 14 lux (HD mode/normal mode, 30 fps, 1/30 sec at ISO400, or 1/15 sec in lamp mode)
Image stabilizer	Electronic (video clip recording mode only)
Monitor	Amorphous silicon TFT color liquid crystal (transmissive) 150,000 pixels (frame coverage: approx. 100%)
Flash working range	GN = 6.4 Approx. 35 cm (13.78 in.) to 2.5 m (8.20 ft.) (Wide) Approx. 1 m (3.28 ft.) to 2.5 m (8.20 ft.) (Tele)
Flash modes	Auto-flash, forced flash, flash off, red-eye reduction
Focus	TTL-type AF (still image shooting mode: 5-point range finder/spot focus; video clip recording mode: Continuous focus), manual focus (22 steps)
Self-timer	Approx. 2-second delay, 10-second delay

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Ambient environment	Temperature	0 to 40°C (32 to 104°F) (operation), –20 to 60°C (–4 to 140°F) (storage)
	Humidity	30 to 90% (operating, no condensation) 10 to 90% (storage, no condensation)
Power supply	Battery pack (supplied)	Li-ion battery pack (DB-L40) × 1
	AC adaptor (supplied)	VAR-G8
Power consumption		4.1 W (When using the Li-ion battery during recording)
Dimensions (excluding protrusions)		80 (W) × 119 (H) × 36 (D) mm 3.15 (W) × 4.69 (H) × 1.42 (D) in. (Maximum dimensions) Volumetric capacity: Approx. 204 cc
Weight		Approx. 210 g (7.4 oz.) (camera only [without battery pack and card])

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SPECIFICATIONS

Camera connectors

[USB/AV] (communication/ audio and video output) terminal	Regrouped jack	
	Audio output	265 mVrms (–9 dBs), 12 kΩ or less, stereo
	Video output	1.0 Vp-p, 75 Ω unbalanced, sync negative, composite video NTSC color TV system/PAL color TV system (switchable from the Option Screen)
	S-video output	Y signal: 1.0 Vp-p, 75 Ω, unbalanced, sync negative C signal: 0.286 Vp-p, 75 Ω, unbalanced NTSC color TV system/PAL color TV system (switchable from the Option Screen)
	USB	USB 2.0 High-speed
[COMPONENT] (720p output) terminal	720p video output Y signal: 1.0Vp-p/75 Ω unbalanced, tri-level sync Pb and Pr signals: 0.7Vp-p/75 Ω unbalanced	
[MIC] (microphone input) terminal	Ø2.5 mm stereo mini jack (converts to a Ø3.5 mm stereo mini jack by the supplied microphone connection cable), 2 kΩ Sensitivity: less than –42 dB (plug-in power type microphone)	
DC IN (external DC power input) terminal	DC 5 V (for exclusive use with the supplied AC adaptor [VAR-G8])	

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Battery life

Shooting	Still image shooting mode	170 images: CIPA standard (when a Hagiwara Sys-Com 512MB SD Memory Card is used)
	Video clip recording mode	75 minutes: Recorded in HD-SHQ mode (1,280 × 720 pixels, 30 fps)
Playback		220 minutes: Monitor on, continuous playback

- Until battery pack runs out when using a fully charged battery pack at a 25°C (77°F) ambient temperature.
- The operation time may vary depending on the conditions of the battery pack and the conditions of use. Especially when used at temperatures below 10°C (50°F), the battery pack operation time is drastically reduced.

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SPECIFICATIONS

Possible No. of Images/Possible Shooting Time/ Possible Recording Time

The table shows the possible number of captured images and the possible recording times for commercially available SD Memory Cards (1 GB, 2 GB, 4 GB).

Shooting/ recording mode	Resolution setting	SD Memory Card		
		1 GB	2 GB	4 GB
Still image mode	10M	297 images	596 images	1,190 images
	5M-H	399 images	795 images	1,590 images
	5M-S	595 images	1,190 images	2,380 images
	16:9	953 images	1,870 images	3,760 images
	2M	1,510 images	2,950 images	5,900 images
	1.2M	2,380 images	4,770 images	9,540 images
	0.3M	7,740 images	15,500 images	31,000 images
Video clip mode	HG SHQ	14 min. 22 sec.	28 min. 46 sec.	57 min. 34 sec.
	HD HQ	21 min. 20 sec.	42 min. 42 sec.	1 hr. 25 min.
	SD HR	21 min. 20 sec.	42 min. 42 sec.	1 hr. 25 min.
	SD SHQ	41 min. 23 sec.	1 hr. 22 min.	2 hr. 45 min.
	SD HQ	1 hr.	2 hr.	4 hr. 1 min.
	MG SHQ	2 hr. 38 min.	5 hr. 17 min.	10 hr. 36 min.
	MG HQ	3 hr. 49 min.	7 hr. 39 min.	15 hr. 18 min.
Audio recording mode	—	16 hr. 49 min.	33 hr. 40 min.	67 hr. 23 min.

- The maximum continuous shooting time at the MG SHQ setting is 5 hours 30 minutes. The maximum continuous shooting time at the MG HQ setting is 7 hours.
- Up to 13 hours of continuous audio recording is possible.
- The above values apply when an SD Memory Card by Sandisk is used.
- Even with cards of the same capacity, the amount of data that can actually be stored may differ depending on the card brand, etc.
- The continuous shooting time for each video clip will differ depending, for example, on the card capacity, environmental conditions (temperature and shooting conditions, etc.).

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Docking station

Part number		PDS-HD1A
Power supply		DC 5V
Rated output		DC 5V
Ambient environment	Temperature	0 to 40°C (32 to 104°F) (recharge), –20 to 60°C (–4 to 140°F) (storage)
	Humidity	20 to 80% (no condensation)
Dimensions		94 (W) × 40.7 (H) × 92 (D) mm 3.70 (W) × 1.60 (H) × 3.62 (D) in.
Weight		Approx. 70 g (2.5 oz.)

Remote control unit

Part number	BRC-C2
Power supply	Lithium battery (CR2025)
Dimensions	32.4 (W) × 68 (H) × 15.6 (D) mm 1.28 (W) × 2.68 (H) × 0.61 (D) in.
Weight	Approx. 16 g (0.6 oz.) (including battery)

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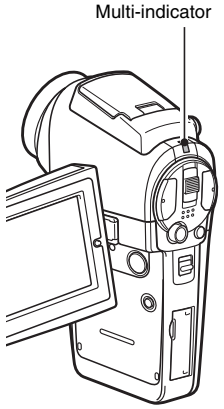
Concerning the multi-indicator

The camera's multi-indicator will light, flash, or be off, depending on the different camera operations.

Color	Multi-indicator status		Camera status
Green	Lit		Connected to computer or printer (USB)
	Flashing		Power save mode active
Orange	Lit		Connected to the dedicated S-AV interface cable or the dedicated component cable
Red	Flashing	Slow	During self-timer photography
		Fast	Accessing card
		Very fast	Battery charge error or rise in internal temperature



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Supplied AC adaptor

Part number		VAR-G8
Power source		AC 100 V to 240 V, 50/60 Hz
Rated output		DC 5 V, 2.0 A
Ambient environment	Temperature	0 to 40°C (32 to 104°F) (operation), –20 to 60°C (–4 to 140°F) (storage)
	Humidity	20 to 80% (no condensation)
Dimensions		49.5 (W) × 25.5 (H) × 68.3 (D) mm 1.95 (W) × 1.00 (H) × 2.69 (D) in.
Weight (without power cord)		Approx. 169 g (6.0 oz.)
Power cord rated value	VPC-HD1A	AC 125 V, 7 A
	VPC-HD1AEX	AC 250 V, 2.5 A

- When using the supplied AC adaptor abroad, the power cord may need to be replaced in accordance with local requirements. Please contact your local dealer for details.

Supplied Li-ion battery pack

Model number		DB-L40
Voltage		3.7 V
Rated output		1,200 mAh
Ambient environment	Temperature	0 to 40°C (32 to 104°F) (during use, when charging) –10 to 30°C (14 to 86°F) (storage)
	Humidity	10 to 90% (no condensation)
Dimensions		53.4 (W) × 6.0 (H) × 35.5 (D) mm 2.10 (W) × 0.24 (H) × 1.40 (D) in.
Weight		Approx. 23 g (0.8 oz.)

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SPECIFICATIONS

Others

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HINTS FOR TAKING PICTURES

Taking great pictures in difficult surroundings is easier than you might think. By keeping a few points in mind and choosing the correct settings, you can create photos that you'll be proud to display and share.

If images are blurred even when the autofocus is used

Your camera employs an autofocus function. When you snap a picture using the autofocus, the camera automatically adjusts the settings so that the image will be in focus. If you are getting blurred images even when using the autofocus, one or more of the following might be the reason.

■ How the autofocus works

The autofocus is activated when the still images shooting button is gently pressed halfway. Press the still images shooting button slightly, and the target mark will appear on the monitor to indicate that the autofocus has been activated. Next, continue to gently press the still images shooting button all the way to snap the picture. This two-step method is the way to ensure that your photos are perfectly focused.

■ Reasons for unfocused images

① The still images shooting button was pressed all the way in one step.
② After the image was focused, the subject moved.
- Even if camera focuses the subject once, if the distance between the camera and the subject is changed, the subject may become out of focus.

③ The focus setting is not set for the correct distance.
- If you shoot a close-up subject with the camera set to the normal focus mode, or if you shoot a subject at normal distance with the camera set to the super macro (close-up) mode, the image will not be in focus.

■ Preventing blurred images

① Confirm that the camera is set to the correct focus mode for your subject.
② Hold the camera correctly, and press the still images shooting button halfway.
③ Wait for the target mark to appear in the monitor, and holding the camera steady, gently continue to press the still images shooting button all the way down.

Following these steps for a gentle but firm pressing of the still images shooting button will ensure that you get beautifully focused photos.

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HINTS FOR TAKING PICTURES

Photographing a moving subject

Situation: You would like to snap an action shot of a moving child or pet. The autofocus is activated, but because the subject is moving, the image may be blurred. In particular, when the distance between the camera and the subject is changing, it is difficult to lock the focus on the subject. Here are some hints for successfully capturing images of moving subjects.

■ **Reasons for unfocused images**

When the still images shooting button is gently pressed halfway, the camera's autofocus works by determining the distance between the camera and the subject. Once the subject is in focus, if it then moves before the picture is snapped, the image may be out of focus. This often happens when you once lock the focus on a subject and then wait for the right moment to snap the picture. And, conversely, a blurred image may result if you press the still images shooting button all the way in one step in an attempt to quickly capture an action scene, thus failing to activate the autofocus in time.

■ **Preventing blurred images (How to use the manual focus [page 80])**

In addition to the autofocus, a manual focus mode is also incorporated in your camera. In the autofocus mode, the distance between the camera and the subject is automatically determined when you press the still images shooting button halfway. In contrast to this, with the manual focus mode, you manually set the focus by specifying the correct distance between the camera and the subject before taking the picture.

■ **How to photograph a moving subject**

① Set the camera's focus mode to the manual focus. Set the focus distance to the correct distance between the camera and the subject.
② When the subject is at the set focus distance, gently press the still images shooting button all the way down.

<Advantage of using the manual focus>

- Images can be quickly captured without waiting for the autofocus to activate.
- Because you are presetting the focus distance, the focus can be more accurate.

<Using the manual focus effectively>

- When photographing a moving subject, press the still images shooting button just before the subject reaches the focus distance, and the shutter will be released when the subject is at the correct distance.
- Use manual focus to avoid incorrectly focused images when there is an object between the camera and the subject you wish to focus on.

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Shooting portraits (portrait mode)

Points:

- Choose a background that doesn't detract from your subject.
- Move in close to your subject.
- Pay attention to lighting and how it affects your subject.

NOTE

- If the background is distracting, it will not show your subject to his best advantage. Move in closer to your subject or zoom in so that the background does not compete with the subject.
- In portrait photography your subject is clearly the central figure, so try techniques that allow the subject to stand out.
- If light is coming from behind your subject (backlit), his face will appear dark. You can get a better picture by using the flash, for example, or changing the exposure setting.

Photographing moving subjects (sports mode)

Points:

- Match the camera's movement with that of the subject.
- Set the zoom to the Wide end (wide-angle).
- Don't be too hesitant to press the still images shooting button, or you'll miss the action.

NOTE

- Tips to not missing those great action shots: Make sure you're holding the camera correctly. Keep the subject in the lens at all times, moving the camera with him while waiting for the right shot. Move your whole body–not just your arms–with the camera while shooting.
- Blurred images are more likely when the zoom is set to the Tele end than the Wide end. Set the zoom as close as possible to the Wide end.
- Learn to press the still images shooting button quickly yet smoothly the instant your photo chance occurs.

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HINTS FOR TAKING PICTURES

Night photography (night view portrait mode)

Points:

- Avoid camera shake.
- Increase the ISO sensitivity.

NOTE

- Camera shutter speed during night photography is considerable slower, so there is a much greater chance that your photographed images will be blurry. Use a tripod whenever possible, or if a tripod is not available, you can lean against a wall or pillar to help stabilize the camera.
- You can photograph your subject with the night scene in the background by using the flash. Be careful not to shoot too close to the subject, however, or your subject's face will appear too bright.
- After the flash operates, keep the camera and the subjects motionless for about 2 seconds.

Photographing scenery (landscape mode)

Points:

- Shoot using a high resolution.
- For zoom photography, use the optical zoom.
- Pay attention to picture composition.

NOTE

- When shooting with a wide-angle setting, or if you intend to enlarge the photo, the higher the resolution, the better.
- To zoom in on distant scenery, it's better to use the optical zoom. Using the digital zoom produces a coarser image. Hold the camera securely, keeping your elbows close to your body and making sure the camera is stable. Using a tripod or other means of stabilizing the camera will increase the likelihood of getting a clear photo.

Don't forget to pay attention to picture composition; note perspective and be aware of how the placement of objects affects the scene.

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SAFETY MANUAL

USING YOUR DIGITAL CAMERA SAFELY AND CORRECTLY

- **Before using your camera, please read and understand these safety instructions as well as the instruction manual for your camera.**
- **Keep all manuals in a safe place for later reference.**
- **These safety instructions cover both the camera and its accessories. Depending on which product was purchased, the camera specifications and accessories may differ.**

CAUTIONS CONCERNING BOTH CAMERA AND ACCESSORIES

WARNING

■ **If a device makes a strange noise, emits a strange odor, or if smoke comes out from it, immediately turn off the power and proceed as follows**

- If a device is used under these conditions, it may cause a fire or electric shock.

① Turn off the device.
② When use the docking station or AC adaptor/charger, unplug the power cord from the power outlet.
③ Remove the battery.

- After completing these actions, wait to make sure no more smoke comes from the device. Then take it to the dealer for service. Do not try to repair or open the device yourself.

■ **Do not use during a storm**

- To avoid the risk of being struck by lightning, do not use the devices during a thunderstorm. In particular, if used in an open field, you have an increased chance of being struck by lightning. Quickly seek refuge in a place that will protect you from lightning.

■ **Keep the devices out of the reach of children**

- The following may happen if children play with the devices:
  - They may wrap the neckstrap around their neck and suffocate.
  - They may swallow the battery or other small parts. In such a case, consult a physician immediately.
  - They may damage their eyesight if the flash goes off too close to their eyes.
  - They may get hurt by the camera or other devices.

■ **Do not disassemble or modify**

- It is dangerous to touch the inside of the devices. Doing so may cause a fire or electric shock.
- The camera, especially, incorporates high-voltage circuits.
- Any internal check, setting, or repair should be performed by the dealer.
- Do not use the AC adaptor as a direct current generator.

CAUTIONS CONCERNING THE CAMERA

WARNING

■ **Do not use while driving**

- Do not capture images, play back images, or watch the LCD monitor while driving a vehicle. Doing so may cause an accident.
- Be careful where you put down the camera inside an automobile. During sudden stops or turns it may fall behind the brake pedal and prevent braking.

■ **Be aware of your surroundings when using the camera**

- Pay close attention to your surroundings when using the camera. Failure to do so may lead to an accident or injury.
- When using the camera while walking, be very careful of your surroundings and especially the traffic to avoid accidents.
- Do not use the camera inside an airplane or elsewhere where its use may be restricted. Doing so may cause an accident.

■ **Do not get the camera wet**

- This camera is not water-resistant. Do not allow it to get wet, as doing so may cause a fire or electric shock.
- Do not use the camera in a bathroom.
- If the camera gets wet, immediately turn it off and remove the battery pack. Then take it to a dealer for repair. Using the camera after it has been become wet may cause a fire, electric shock, or other accident.

■ **Do not place on an unstable surface**

- The camera may fall, resulting in damage to the camera or injury.
- If the camera has fallen and its body is damaged, turn it off, remove the battery pack, and take it to the dealer for repair. Using the camera after its body has been damaged may cause a fire or electric shock.

■ **Do not look through the camera into the sun**

- Do not look through the camera at the sun or any other strong source of light. Doing so may seriously injure your eyes.

■ **Do not use the flash close to a person's face**

- To prevent possible eye injury, do not use the flash near a person's face. If the flash is used close to a person's opened eyes, there is a risk that it may damage that person's eyesight. Especially with young children or babies, use the flash from a distance of at least 1 meter away.

■ **Do not use where there is risk of explosion**

- Do not use the camera in a location where there is explosive gas, or any other flammable material in the air. Doing so may cause a fire or an explosion.

CAUTION

■ **Cautions when carrying the camera**

- Do not walk around with the camera suspended from your neck or dangling from your wrist. It may hit other objects and get damaged. When walking around, hold the camera in your hand or place it in a pocket.
- Be careful not to drop the camera or subject it to strong shocks.
- Make sure direct sunlight does not hit the camera lens, as that may damage the internal parts. When not using the camera, be sure to always turn it off and confirm that the lens is covered.

■ **If the camera is not going to be used for a long period of time**

- For safety's sake, remove the battery pack from the camera. This will prevent any possible excess heat or leakage of battery fluid that may result in injuries or damage to nearby objects.

■ **Cautions during use and storage**

- This camera is a precision instrument. It should not be used or stored where there are extreme changes in temperature or humidity, or where it may be exposed to water or dust.

Operating environment:
- Temperature 0 to 40°C (32 to 104°F) (operation)
  –20 to 60°C (–4 to 140°F) (storage)
- Humidity 30 to 90% (operation, no condensation)
  10 to 90% (storage, no condensation)

■ **Do not cover or wrap the camera in a cloth or blanket**

- It may generate heat and cause the casing to warp or cause a fire.

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CAUTIONS CONCERNING THE DOCKING STATION AND AC ADAPTOR/CHARGER

DANGER

■ **Do not recharge a battery pack other than the specified battery pack**

- Recharging a dry-cell battery or other type of rechargeable battery may cause excess heat, combustion, or leakage, and cause a fire, injuries, burns, or damage to nearby objects.

■ **Concerning the power cord**

- The voltage rating for the power cord supplied with this camera conforms to the standards of the country in which the camera was sold.

■ **Do not get the docking station or AC adaptor/charger wet**

- Make sure they do not get wet, as doing so may cause a fire or electric shock.
- Do not use them in a bathroom.
- If the docking station or AC adaptor/charger gets wet, immediately unplug it from the power outlet and remove the battery pack. Then contact the place of purchase. If used while wet, it may cause a fire, electric shock, or an accident.

WARNING

■ **Cautions when plugging in the power cord**

- Securely plug the power cord all the way into the power outlet. If the docking station or AC adaptor/charger is used with the power cord not fully plugged in, heat may be generated and cause a fire.
- Do not use if the power cord is damaged or cannot be correctly plugged into the power outlet. Using in this condition may cause a fire or electric shock.

- Do not allow dust, etc., to build up on the power cord or power outlet. A build-up of dust may cause a short circuit or generate heat and cause a fire. Use a dry cloth to remove dust or dirt build-up after unplugging the cord from the power outlet.
- When unplugging the power cord, be sure to hold the plug part and slowly pull it out of the power outlet. Pulling the cord portion may damage the power cord and cause a fire or electric shock.

■ **Do not damage the power cord**

- Do not place heavy objects on the power cord. Do not place the power cord near a heat source. Do not excessively bend the power cord, modify it, or secure it with staples. Doing so may damage the power cord and cause a fire or electric shock.
- If the power cord is damaged, or if it does not plug properly into the docking station, AC adaptor/charger or wall outlet, contact the place of purchase.

■ **Cautions concerning the power cord**

- Do not leave the power cord plugged into an electrical outlet while the other end is not plugged into the AC adaptor/charger. The loose end can cause electrocution if touched with wet hands or if handled by children.
- Use only the supplied power cord. If a different power cord is used, it may be rated for a different current load, and that may cause a fire.
- The supplied power cord is for exclusive use with the AC adaptor/charger supplied with your camera. Do not use it with other devices, as doing so may cause a fire or electric shock.
- Do not use a bundled power cord, as the heat generated may cause a fire.

■ **Do not touch the power cord plug with wet hands**

- Doing so may cause an electric shock.

CAUTION

■ **Do not place on an unstable surface**

- If may fall, resulting in damage or injury.
- If it falls and the body is damaged, remove the battery pack and contact the place of purchase. If used while damaged, it may cause a fire, electric shock, or other damage.

■ **Other cautions**

- Use only the supplied or specified docking station and AC adaptor/charger with your camera.
- If a docking station or AC adaptor/charger other than the ones specified is used, it may damage the camera and cause a fire or electric shock.
  Use the supplied or specified docking station and AC adaptor/charger only with the specified camera. Do not connect to other cameras, as doing so may result in damage.

■ **Cautions during use and storage**

- Do not use or store close to a heat source (close to a stove or heater) or leave it exposed to direct sunlight, as doing so may result in defective operation or damage.

Operating environment:

- Temperature 0 to 40°C (32 to 104°F) (charging)
  –20 to 60°C (–4 to 140°F) (storage)
- Humidity 20 to 80% (charging and storage)

- To avoid the danger of possible fire, be sure to remove the power cord from the power outlet before leaving home for a trip or if otherwise the devices will not be used for a long time.

CAUTIONS CONCERNING THE CARD

CAUTION

■ **Cautions concerning the card**

- Immediately after use, the card will be very hot. Before removing the card, turn off the camera and wait for the temperature to cool down.
- Keep out of the reach of children. Young children may put the card in their mouth and choke or cause some other unexpected injury or accident.

■ **Cautions when handling the cards**

- The cards are precision devices. Do not bend, drop, or subject them to strong forces or shocks.
- Avoid using or storing the cards in places with extremely high or low temperatures, subject to direct sunlight, in a completely closed vehicle, near air conditioners or heaters, or in humid or dusty locations.
- Avoid using or storing the cards in locations where strong static electrical charges or electrical noise can be easily generated.
- Do not allow the edges of the cards to become contaminated with foreign materials. Gently wipe away any contamination with a soft, dry cloth.
- Do not carry the cards in trouser pockets, as the cards may become damaged when you sit down or make other movements that may apply force.
- Before using a new card or a card that was used in other equipment, be sure to format it using the camera. Please see the Instruction Manual for information regarding how to format the card.
- When buying commercially available products, carefully read the instructions and warnings that come with the card.

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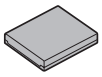
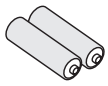
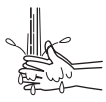
CAUTIONS CONCERNING THE BATTERY

SAFETY PRECAUTIONS	Battery type and danger level (Note: The cautionary notes differ depending on the model you purchased. Please check the safety precautions corresponding to your model.)		
	Rechargeable Li-ion battery pack 	Alkaline batteries 	Lithium battery for remote control unit
■ **Use only batteries manufactured by SANYO** • Do not use batteries other than the specified model numbers from SANYO. Especially for safety purposes, do not use imitation products. If dry-cell batteries or other rechargeable batteries are used, the batteries may generate heat, rupture, or leak and result in fire, injury, burns or damage to surroundings.	**DANGER**	—	
■ **If there is leaking, discoloration, change of shape, rise in temperature, damaged exterior, strange odor or any other abnormal condition, immediately discontinue use and remove the battery from the camera, taking care to keep it well away from fire** • Continuing to use the battery under any of these conditions may result in fire, injury, explosion or other serious damage. • If battery fluid is leaking, placing the battery in close proximity to a fire or other heat source may ignite the battery fluid and result in fire, damage, eruption of battery fluid, or smoke fumes.	**DANGER**		**WARNING**
■ **Do not transform, take apart, or modify** • Any modification, by transforming, disassembling, or directly soldering to the battery, etc., will possibly cause the battery to catch fire, explode, or leak or spew battery fluid.	**DANGER**	**WARNING**	
■ **Do not connect the (+) and (–) terminals with a wire or other metal implement. Do not carry loose or keep with necklaces, hairpins, etc.** • Doing so may result in a short circuit, high voltage flow, fire, explosion, leaking or spewing battery fluid, or heat generation. Metal such as a wire or necklace, etc. may cause heat to be generated.	**DANGER**	**WARNING**	
■ **Do not throw the battery in the fire or subject it to heat** • Doing so may cause the insulation to melt, damage the gas discharge valve and safety mechanisms, or ignite the battery fluid, resulting in fire or explosion.	**DANGER**	**WARNING**	
■ **Do not drop, hit, or submit the battery to strong shocks** • If the safety mechanisms and protective devices are broken, an abnormal chemical reaction may occur inside the battery, or cause the battery to catch fire, explode, leak or spew battery fluid, or generate heat.	**DANGER**	**WARNING**	
■ **Do not allow the battery to come into contact with fresh or salt water, or allow the terminals to become wet** • If the safety mechanisms and protective devices are damaged by corrosion, an abnormal chemical reaction may occur inside the battery, or cause the battery to catch fire, explode, leak or spew battery fluid, or generate heat.	**DANGER**	**WARNING**	
■ **Use only the supplied or specified docking station and AC adaptor/charger** • If another charger is used, the battery pack may be overcharged, or recharged with an abnormal voltage, causing an abnormal chemical reaction to occur, or cause the battery pack to catch fire, explode, leak or spew battery fluid, or generate heat.	**DANGER**	—	
■ **Use the battery pack only in the specified device** • If the battery pack is used in a device other than that specified, it may cause an abnormal voltage flow, or cause the battery pack to catch fire, explode, leak or spew battery fluid, or generate heat.	**DANGER**	**WARNING**	
■ **Do not peel or damage the outer casing** • Damaging the outer case, inserting nails, hitting with a hammer, stepping on the battery pack, etc. may cause a short circuit inside the battery or cause the battery pack to catch fire, explode, leak or spew battery fluid, or generate heat.	**DANGER**	**WARNING**	
 ■ **If the battery is leaking and the battery fluid gets on your skin or clothing, immediately rinse with clean water** • If the battery fluid gets into your eyes, you risk losing your eyesight. Immediately rinse your eyes with clean, running water, and seek medical attention right away. Any battery fluid that comes into contact with your skin or clothing may harm your skin. Immediately rinse the area with clean, running water.	**DANGER**	**WARNING**	
■ **Insert the battery correctly, as indicated** • When installing the battery, pay attention to the indicated polarity (+ and –), and insert it correctly. • If the battery pack is installed with the wrong orientation, it may cause an abnormal chemical reaction while in the charger, an abnormal voltage flow when it is used, or cause the battery to catch fire, explode, leak or spew battery fluid, or generate heat.	**DANGER**	**WARNING**	
■ **Always stop the recharging after the prescribed recharge time, even if the battery pack is not fully charged** • If you continue to recharge the battery pack, it may cause the battery pack to catch fire, explode, leak or spew battery fluid, or generate heat.	**WARNING**	—	
■ **Charge the battery pack before using it** • Always recharge the battery pack before using it for the first time, or when using it after it has been kept in storage for a long time. During recharging, the battery pack may be warm. This is normal and does not indicate a malfunction.	**CAUTION**	—	
■ **Note concerning the battery after use** • When removing the battery, turn off the camera and allow the battery to cool down before removing it.	**CAUTION**		—
■ **Disposal of and recycling the battery** • When disposing of used batteries, please consult the laws and regulations in your area for proper battery disposal. • Lithium-ion batteries: To conserve the environment and for efficient use of natural resources, please discharge the used battery, cover the (+) and (–) terminals with tape and recycle the insulated battery.	**CAUTION**		

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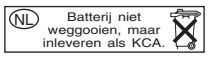
CAUTIONS CONCERNING THE BATTERY



■ **General precautions concerning the batteries (when using alkaline batteries)**

- **Use only alkaline batteries or other specified batteries in this camera. Manganese batteries cannot be used, as they have a short battery life and may overheat, causing damage to the digital camera.**
- Use of an alkaline battery together with a Ni-Cd battery, or a new battery with an old or consumed battery, may generate heat or cause the batteries to leak, resulting in fire, injury or burns, or damage to the camera and any other nearby object.
- Use of batteries without protective casings or other inferior products may cause a fire, injury, or burns.
- Do not attempt to recharge dry-cell batteries.
- If the digital camera is not going to be used for a long period of time, remove the batteries and store them in a cool place. (When the batteries are removed for a long period, the time and date settings will be cleared.)
- If using rechargeable batteries instead of alkaline batteries, use after fully recharging with the exclusive battery charger. Be sure to read and understand the instruction manuals that may come with the batteries you purchase, as well as the instruction manual for the battery charger, before use.

■ **Cautions concerning use and storage of the rechargeable Li-ion battery pack**

- **Temperature when using or recharging: 0 to 40°C (32 to 104°F)**
- **Do not use, recharge, store or leave the battery pack near fire or inside a car exposed to the hot sun, etc. (locations in which the temperature reaches 60°C [140°F] or higher).**
- At high temperatures, the safety mechanisms and protective devices inside the battery pack may be damaged by corrosion, causing an abnormal chemical reaction to occur, or cause the battery pack to catch fire, explode, leak or spew battery fluid, or generate heat. If the safety mechanisms and protective devices are damaged, the battery pack will become unusable.
- An environment with extremely high or low temperatures will cause the battery capacity to deteriorate and shorten the usable time, and may even shorten the battery life.
- Avoid storing the battery pack with it near full charge. It is recommended to store the battery pack when it is near fully discharged.
- If the battery pack is completely discharged, it may become unable to be recharged again. To avoid this, charge the battery pack for at least five minutes every six months.
- **Storage temperature: –10 to 30°C (14 to 86°F)**
  When not using the battery pack, remove it from the camera and store at –10 to 30°C (14 to 86°F) in a place with no condensation.
- **Humidity: 10% to 90% (no condensation)**

FOR CORRECT USE OF YOUR CAMERA

■ **Cautions before capturing important images**

- Before capturing important images, make sure that the camera is operating properly and in condition to capture the images properly.
- Sanyo Electric shall not be held responsible for any losses that result from images that could not be recorded, are erased, destroyed, or damaged in any way due to a problem with the camera, any of its accessories, or its software.

■ **Caution concerning copyrights**

- The images you capture with your camera are for your own private use; any other use may violate the rights of copyrights owners.
- Please note that photography may be restricted at stage performances, shows or exhibitions, even in presentations whose purpose is entertaining or amusing individuals.
- Also note that images that are intended to be copyrighted cannot be used outside those limits defined by the regulations of the relevant copyright laws.

■ **Cautions when cleaning the camera**

Cleaning procedure

① Turn off the camera and remove the battery pack.
(For safety, remove the power cord plug of the AC adaptor from the power outlet.)
② Remove the dirt with a soft cloth.

If the camera is extremely dirty,

③ Wipe with a soft cloth moistened with a mild detergent diluted with water and wrung dry.

CAUTION

- Do not use benzene or thinner products to clean the camera. Doing so may cause deformation, discoloration, or paint peeling. When using a chemically treated cloth, carefully read its instructions and warnings.
- Do not spray insecticides or volatile sprays on the camera. Do not let rubber or vinyl objects contact the camera for a long period. They may cause deformation, discoloration, or paint peeling.

■ **Caution concerning the battery pack**

- Periodically clean with a dry cloth the terminals (contacts) of the battery pack. Do not touch the battery terminals with your bare hands. Doing so will allow contaminants from your hands to adhere to the terminals and oxidize, increasing the contact resistance. If the contact resistance increases, the usable life of the batteries will diminish.

■ **Caution when cleaning the lens**

- If the lens gets dirty, use a commercially available air blower or a cleaning cloth for photographic equipment to clean it.

■ **When not using the camera for a long period**

- Remove the battery pack. However, when the battery pack is removed for a long time, the camera functions may begin to not work properly. Periodically reinstall the battery pack and check the camera functions.
- If the battery pack is left in the camera, a small amount of power is still used even if the camera is turned off. If a rechargeable battery pack is left in the camera for a long period, it may become completely discharged and lose its ability to be recharged again.

■ **Cautions concerning condensation**

- Using the camera with condensation inside it may damage the camera.

If condensation seems likely to form

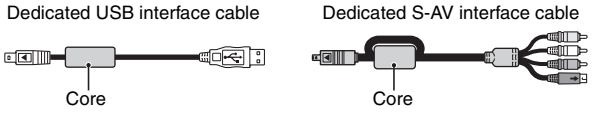
- Place the camera in a plastic bag and seal it, and then wait until the camera has reached the ambient temperature.

Be careful of condensation under the following conditions

- When moving the camera suddenly from a cold place to a warm place.
- When the ambient temperature changes drastically, such as when a heater is turned on to quickly heat the room.
- When the camera is placed in the path of cool air from an air conditioner.
- When the camera is placed in a location of high humidity.

■ **Caution concerning undesired interference**

- The camera may create undesired interference if used close to a television or radio. To avoid this type of interference, make sure the cores on the supplied cables are not removed.



* The type (shape) and quantity of cable(s) supplied may differ depending on which product was purchased.

- If the docking station or AC adaptor/charger is used in close proximity to a radio or TV set, it may cause interference such as static in AM broadcast signals or noise in the TV image. In this case, increase the distance between the radio or TV and the device.

■ **Caution concerning magnetism (for cameras with a speaker)**

- Do not place credit cards, bank cards, floppy disks, or other items that may be damaged by magnetic fields near the speaker. Data may be lost or the magnetic strips on cards may be damaged.

■ **Cautions concerning data storage**

- It is recommended that any important data be copied onto a separate media (such as a hard disk, MO disk, or CD-R disk).
- Stored data may be lost (or corrupted) in cases such as those listed below.
- Sanyo Electric will not be held responsible for any damage or lost profits arising from the loss of data.
  - If the card is used incorrectly.
  - If the card is not inserted correctly into the camera.
  - If the card is subjected to electrical or mechanical shocks or other forces.
  - If the card is removed from the camera or if the camera is turned off during reading or writing operations.
  - If the card has reached the end of its usable life.

■ **Caution concerning high temperatures**

- During shooting, when the internal temperature of the camera becomes high, the icon will appear on the LCD monitor. When the icon appears, it is still possible to capture and play back images for a while. However, if the temperature rises further, it will become impossible to record (although playback will still be possible). In this case, discontinue shooting as soon as possible, and wait until the temperature falls before using the camera again. Note that particularly when recording video clips, soon after the icon appears, the remaining recording time indication will appear, and when that figure becomes 00:00:00, further recording is impossible.

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SANYO

SANYO Software Pack 7.7
For Digital Movie Camera

INSTRUCTION MANUAL

Please read these instructions carefully before using. Be sure to keep this manual for later reference.

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INTRODUCTION

This manual describes how to install and operate the SANYO Software Pack. Please read this manual carefully, in order to use the images and audio recordings captured with your camera in a wide range of applications.

About this manual

The explanations in this manual conform to the following conventions.

- The examples given in this manual are generally based on a Windows environment. For Macintosh users, while the menu names and screen indications may be different, this is no impediment to understanding the operation. In those places where the operations for Macintosh users and Windows users differ, specific explanations are provided.
- In this manual, the SD Memory Card is referred to as “card”.
- This manual is designed for users with the following computer skills:
  - Knowledge of basic computer operations
  - Knowledge of basic mouse operations
  - Knowledge of how to open, close, move, minimize and maximize windows
  - Knowledge of how to move from one folder to another folder

Detailed information about the operations listed above can be found in the printed or online manuals accompanying the computer or operating system software.

Symbols used in this manual

HINT Extra information about software or cautionary notes.
CAUTION Points requiring special attention.
(page xx) Refer to the page indicated for detailed information.

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The software

The following software applications are in the SANYO Software Pack.

Please see page 16 for a summary of each software program.

- QuickTime 7.0
  In this manual, referred to as QuickTime.
- Ulead Photo Explorer 8.5 SE Basic (Windows)/Photo Explorer for Mac 2.0 (Macintosh)
  In this manual, referred to as Photo Explorer.
- Motion Director SE 1.1 (Windows)
  In this manual, referred to as Motion Director.
- Ulead DVD MovieFactory 5.0 SE (Windows)
  In this manual, referred to as MovieFactory
  * PhotoExplorer and MovieFactory both support the MPEG-4 format. Installing these application software will allow you to view MPEG-4 files.

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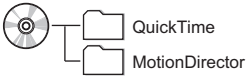
CD-ROM directory map

Below is a directory map of the SANYO Software Pack contents.

<Windows>

• Disc1

SanyoDisc1 (D:)*



• Disc2

SanyoDisc2 (D:)*

* The drive name (D:) may be different on your computer.

<Macintosh>

• Disc1

SanyoDisc

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OPERATING ENVIRONMENT

The operating environments for the respective application software are as shown below.
Concerning the operating environment when handling HD mode or 60 fps video clips, please see page 12.

Windows

<table>
<tr><th>Software</th><th>CPU</th><th>Memory</th><th>Hard drive</th><th>OS</th></tr>
<tr><td>QuickTime</td><td>Pentium
or faster</td><td>128 MB or more</td><td>11 MB
or more</td><td rowspan="4">Windows 2000 SP4 or later
Windows XP SP2 or later</td></tr>
<tr><td>Photo Explorer</td><td>Pentium III
800 MHz
or faster</td><td rowspan="2">256 MB or more
(512 MB recommended)</td><td rowspan="3">950 MB
or more</td></tr>
<tr><td>Motion Director</td><td>Pentium III
1 GHz
or faster</td></tr>
<tr><td>Movie Factory</td><td>Pentium III
800 MHz
or faster</td><td>512 MB or more</td></tr>
<tr><td>Other</td><td colspan="4">Direct X9.0 or later</td></tr>
</table>

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Macintosh

Software	CPU	Memory	Hard drive	OS
Photo Explorer	Power PC or later	64 MB or more	20 MB or more	Mac OS 9.0 or later (CarbonLib 1.4 or more); Mac OS X 10.1 or later

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BEFORE MOUNTING YOUR CAMERA

The following is an explanation of the format of data recorded by your camera, as well as the configuration of directories in the card.

Cautions when using the camera as an external drive

- Do not alter files or folders in your camera in any way. Doing so may result in your camera not recognizing that data.
  If you want to edit files, first copy them to your computer's hard drive.
- Cards formatted on your computer cannot be used by your camera. Format all cards to be used by your camera with your camera.

Operating environment

Windows

A computer with a standard-equipped USB port, and preinstalled with Windows 2000, Me or later is required. Correct operation cannot be guaranteed for models with upgraded Windows systems.

Macintosh

A model with a standard-equipped USB port, and preinstalled with Mac OS 9.0, 9.1, 9.2, Mac OS X 10.1 or later is required.

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Data file formats

The format of the files saved on the card and the method in which the file names are determined are explained below.

Type of data	Data format	File name structure
Still image data	JPEG	File name begins with SANY. Extension is ".jpg". SANY****.jpg
Video clip data	MPEG-4	File name begins with SANY. Extension is ".mp4". SANY****.mp4*
Audio recording data	MPEG-4 Audio (AAC compression)	File name begins with SUND. Extension is ".m4a". SUND****.m4a*

* Consecutive numbers assigned in the order the data was saved.

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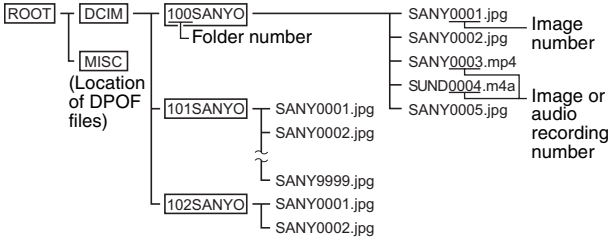
Configuration of directories in the card



* Up to 9,999 files can be stored in folder 100SANYO. If more files are made, a folder named 101SANYO is created, and they will be stored in there. New folders will then be named in sequence, i.e., 102SANYO, 103SANYO, etc.

HINT

About the volume name

- The volume name will be [XACTI HD1A] for a card that was formatted with the camera, and [Removable disc] for a card that was formatted with a computer.

About video clip data recorded with this camera

- You can use Apple's QuickTime 6.3 or later version to play back video clips on a computer. Playback may also be possible using other software that supports the ISO standard MPEG-4 (AAC audio). QuickTime 7.0 for Windows is supplied with the included CD-ROM (SANYO Software Pack).

About audio data recorded with this camera

- If you change the extension (.m4a) of audio data files to ".mp4", playback may be possible using software that supports the ISO standard MPEG-4 (AAC audio).

About file names when the card is replaced...

- If the file number reset function is set to off, even when the card is replaced, consecutive numbering of folder numbers and file names continues from the previously installed card (see page 141 in the camera's instruction manual).

CAUTION

If you intend to view the images on the camera, do not use a computer to rewrite the card data.

- If the folders, file names, or their configuration is modified using a personal computer, it will be impossible to play back the data using the camera, and the camera may not operate properly.

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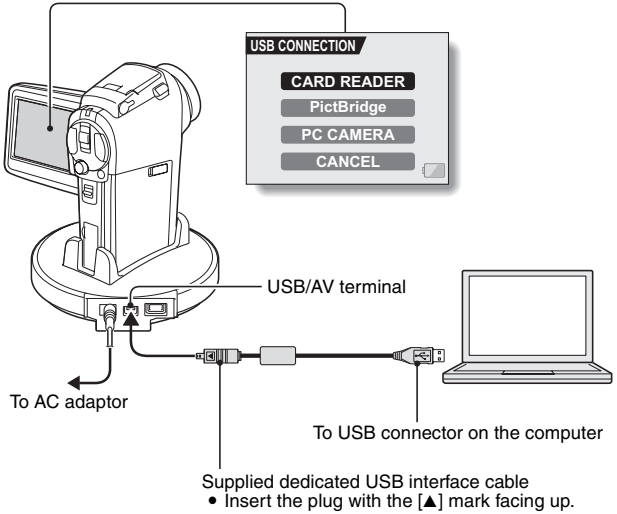
Setting to the card reader mode

❶ **Start your computer, and use the supplied USB interface cable to connect the docking station to the computer.**
- Connect the docking station's USB/AV terminal to the computer's USB connector.

❷ **Press the ON/OFF button to turn the camera on, and set the camera in the docking station.**
- The USB Connection Screen appears on the camera's monitor.



❸ **Select "CARD READER", and press the SET button.**
- When the camera's monitor unit is closed and the camera is set in the docking station, press the operation mode button [⚡] on the docking station.

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CAUTION

Insert and pull out the cable carefully

- When connecting the cables, make sure that the cable plugs are correctly oriented and that they match the shapes of the terminal sockets on the devices. Push the plugs in straight when connecting them. If undue force is used to connect a cable, it may permanently damage the connector pins in the terminal socket.
- Do not use excessive force when connecting and disconnecting cables.
- Please connect the dedicated USB interface cable to your computer's USB connector. Do not connect it to the USB port on your monitor or keyboard, or to the USB hub. Be especially careful when installing the driver software. In some instances, it may not be possible to correctly install the driver software.

To play back in the HD mode or a 60 fps video clip

The computer or application software operating environment to play back video clips recorded in the HSHQ, HHQ or HHR mode is as shown below.

	Windows®	Macintosh®
OS*	Windows® 2000 SP4 or later/ Windows® XP SP2 or later (QuickTime 7.0.1 or later)	Mac OS X 10.3.6 or later (QuickTime 6.5.2 or later)
CPU	HSHQ HHQ Pentium 4, 3.0 GHz or more HHR Pentium 4, 2.4 GHz or more	Power PC G5 1.6 GHz or more
Memory	512 MB or more (1024 MB or more recommended)	512 MB or more
Video memory	64 MB or more (128 MB or more recommended)	64 MB or more

*: Limited to models with the operating system pre-installed.

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For Windows XP users

Mounting your camera

❶ **Set the camera to the card reader mode (page 11).**
- The message [Found New Hardware] appears in the task tray, showing that the camera is recognized as a drive.
- The card is recognized (mounted) as a disk, and the [XACTI HD1A (E:)] window opens.
  * The drive name (E:) may be different on your computer.

❷ **Select an action.**
- Select the desired procedure from the [XACTI HD1A (E:)] window.

Dismounting the camera

CAUTION
- To disconnect your camera, be sure to follow the procedure below. Failure to follow this procedure may cause faulty operation of your computer or loss of card data.

❶ **Left-click on the icon for safely removing hardware.**
- A list appears showing the devices connected to the computer's USB connector.

❷ **Left-click on the camera drive (E:).**
- The camera can now be disconnected.
  * The drive name (E:) may be different on your computer.

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For Windows Me/Windows 2000 users

Mounting your camera

❶ **Set the camera to the card reader mode (page 11).**
- If a message appears on the computer monitor instructing you to load the Windows CD-ROM, follow the instructions and install the driver.
- The camera is recognized as a drive, and [XACTI HD1A (E:)] appears in the [My Computer] window.
  * The drive name (E:) may be different on your computer.
- The card is recognized (mounted) as a disk.
- Double-click on the [XACTI HD1A (E:)] icon in [My Computer], and you can process the contents of the card installed in your camera exactly like you would the data in the other computer drives.

Dismounting the camera

CAUTION
- To disconnect your camera, be sure to follow the procedure below. Failure to follow this procedure may cause faulty operation of your computer or loss of card data.

❶ **Left-click on [Unplug or Eject Hardware] in the task tray.**
- A list appears showing the devices connected to the computer's USB connector.

❷ **Left-click on the camera drive (E:).**
  * The drive name (E:) may be different on your computer.
- The [Safe to Remove Hardware] dialog box will open.

❸ **Click on the [OK] button.**
- You can now disconnect the camera.

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For MAC OS 9.xx users

Mounting your camera

❶ **Set the camera to the card reader mode (page 11).**
- The camera is recognized as a drive and appears as an icon named [XACTI HD1A] on the Desktop.
- Double-click on the [XACTI HD1A] icon, and you can process the contents of the card installed in your camera exactly like you would the data in the other computer drives.

Dismounting the camera

CAUTION
- To disconnect your camera, be sure to follow the procedure below. Failure to follow this procedure may cause faulty operation of your computer or loss of card data.

❶ **Drag the [XACTI HD1A] icon for your camera on the Desktop to the trashcan.**
- The [XACTI HD1A] icon disappears from the Desktop.
- You can now disconnect your camera.

For MAC OS X users

Use the same mounting and dismounting procedure as for the MAC OS 9.xx. However, if an application which automatically recognizes camera images is installed, it will be activated.

CAUTION
When using in a Mac OS X Classic environment
- It is not possible to save or load data directly to or from the card installed in the camera. The data must first be saved once to your hard disk.

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INSTALLING THE APPLICATION SOFTWARE

The SANYO Software Pack contains the application software indicated below. Installation of each application will serve to optimize your use of the data recorded with your camera.

- **QuickTime*1**
  Play back video clips. The recorded audio is played back at the same time. Be sure to install this application if you are going to view video clips that were photographed with your camera (Windows).
- **Photo Explorer*2**
  Organizing the data recorded with your camera is easy to understand using the graphic screen.
- **MovieFactory*2**
  Use this integrated tool to store various files–such as video and music files, photo files, data files, etc.– to disc for processing with your computer.
- **Motion Director**
  Use Motion Director to remove motion blur from video clips captured with your camera and to make a single panorama still shot from a video clip recorded while panning.

*1 By upgrading from QuickTime to QuickTime Pro, you will be able to edit QuickTime movies, among other features. You can upgrade from Apple Computer, Inc.'s web page at http://www.apple.com.

*2 If PhotoExplorer or MovieFactory is installed on your computer, you can use Windows Media Player to play back video clips (MPEG-4) that were recorded with your camera.
For information about software updates, please refer to the following website:
http://www.ulead.com/

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Windows

❶ **Insert the CD-ROM (SANYO Software Pack Disc 1 or 2) in your computer's CD-ROM drive.**
- The installation window soon appears.
- If the installation window does not appear, double-click on the CD-ROM icon in the My Computer window, and double-click on [Autorun] or [Autorun.exe] in the CD-ROM window.

❷ **Click on the name of the application software you wish to install.**
- The window for beginning the installation procedure for the specified application will open.
- The installer program for each application is preset to properly install the software. If you are unfamiliar with the computer, we recommend clicking the [Next] button at each screen.
- If a user registration dialog box appears, do not enter anything in the [Enter your registration information] dialog box, and click on the [Next] button.
- If a dialog box prompting you to restart your computer appears, restart your computer.

You can find more information about the respective applications at:
QuickTime: http://www.apple.com
Photo Explorer: http://www.ulead.com

❸ **Click on [DONE].**

HINT

About Kodak online service

- When the installation window closes, a dialog box to connect to the website introducing Kodak's online service appears. To go to the website, select the [Tell me more now !] option button. If you do not wish to go to the website, select on the [No thanks !] option button. Click on the [OK] button.

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Macintosh

Photo Explorer installation

❶ **Insert the CD-ROM (SANYO Software Pack Disc 1) in your computer's CD-ROM drive.**
- The CD-ROM window will open after a few seconds.
- If the window does not open, double-click on the CD-ROM icon [SanyoDSC] on the Desktop.

❷ **Install the Photo Explorer.**
- Open the [Photo Explorer] folder and copy the [English] folder (or whatever other language you prefer) to your hard disk.
- When the folder has been copied, installation of the application is completed.

HINT

About the [Carbon Lib] folder

- If your computer's CarbonLib file (extension file) is earlier than version 1.4, please install the CarbonLib file (in the [Carbon Lib] folder) to the extension folder.

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HOW TO USE Photo Explorer

To copy data from your camera to your computer, when you open the drive for your camera from [My Computer], options are shown for copying data to your computer and for using Photo Explorer to copy data. Explained in this section is how to use Photo Explorer to copy the camera's data to your computer. For a detailed explanation of Photo Explorer, please see the Help menu of Photo Explorer.

Set up the environment

Specify the source of the data (data location in your camera) to be copied.

■ **Windows**

❶ **Set the camera to the card reader mode (page 11).**
- Open the [Ulead AutoDetector] dialog box.
- If the window showing the contents of the card installed in the camera (XACTI HD1A (E:) is open, click on the [Close] button to close it.

❷ **In the [Ulead AutoDetector] dialog box, check the box [Always open with the selected program], and click on the [OK] button.**
- The [Copy file to...] dialog box will open.
- If you check the [Always open with the selected program] box, the [Ulead AutoDetector] dialog box step will be skipped from the next time.

❸ **Turn ON the [Open Ulead Photo Explorer to view photos] option button, and click on the [OK] button.**

❹ **Click on the digital camera wizard icon on the toolbar.**
- The [Digital Camera Wizard] dialog box will open.

❺ **Click on the drive name (A:\) to the right of [Camera drive or card reader].**
- The [Select Image Source] dialog box will open.

❻ **Turn ON the [Camera drive or memory card reader] option button, select the camera drive from the [Location] list box, and click on the [OK] button.**
- The drive name to the right of [Camera drive or card reader] is changed to the drive specified in step 6.
- If you wish to now read the data from the card installed in the camera, click on the [Start] button. The data from the card will be copied to My Documents\SANYO_PEX.
- If instead you wish to discontinue after changing the settings, click on the [Cancel] button.
- The [Digital Camera Wizard] dialog box will close.

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■ **Macintosh**

❶ **Set the camera to the card reader mode (page 11).**
- The [XACTI HD1A] icon will appear on the desktop.

❷ **Open the folder in which Photo Explorer was installed, and double-click on the Photo Explorer program icon.**
- Run Photo Explorer.

❸ **Click on the digital camera wizard icon on the toolbar.**
- The [Digital Camera Wizard] dialog box will open.

❹ **Click on the icon in the [Camera flash disk drive] section.**
- The [Choose Removable Drive] dialog box will open.

❺ **Click on the drive for the camera connected to your computer (XACTI HD1A), and click on the [Select] button.**
- The drive name in the [Camera flash disk drive] section is changed to [XACTI HD1A].

❻ **Turn ON the [Create subfolder] checkbox.**
- If you wish to now read the data from the card installed in the camera, click on the [Start] button.
- If instead you wish to discontinue after changing the settings, click on the [Cancel] button.

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Copying image data to a computer

Copy image files to the computer from the card installed in your camera.

❶ **Set the camera to the card reader mode (page 11).**
❷ **Run Photo Explorer.**
❸ **Click on the digital camera wizard icon on the toolbar.**
- The [Digital Camera Wizard] dialog box will open.

❹ **Click on the [Start] button.**
- Copying begins.
- A folder with the name as indicated below is automatically created, to which the data is copied.
  Windows: My Documents\SANYO_PEX
  Macintosh: Macintosh HD:Ulead Photo Explorer
- When copying is completed, the [Done] dialog box will appear.

❺ **When copying is completed, click on the [OK] button.**
- The copied data is shown in a thumbnail window.

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Photo Explorer features

With the Photo Explorer you have visually integrated control over multiple files, from camera images to DV camcorder video files to audio files (such as MP3 and WAV files).

■ Manage and edit image files

Viewing images

Images can be viewed full-size or full-screen. Use the keyboard controls or toolbar buttons to select the menu, and you can browse the images or play them back, for example, in a slideshow.

Organizing and editing images

You can copy and erase image files, as well as change the file names. In addition, you can rotate and flip images, and save the edited images as new files.

Adjusting images

You can easily enhance images by clipping and adjusting the contrast, brightness, color balance, etc. The created images can be used for wallpaper or screen savers.

■ Abundant slideshow features

Slideshows containing combinations of still images and video clips can be played back.

■ Convert the format of video clip data

Video clips (QuickTime format) that were shot with your digital camera can be converted to other formats, such as AVI and MPEG.

■ For questions about Photo Explorer

Further information about Photo Explorer can be found at http://www.ulead.com

<Where to find the serial number>

- From the Photo Explorer [Help] menu, select “About Ulead Photo Explorer”. The program version as well as the serial number are shown.

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USING AS A PC CAMERA

If running Windows XP, you can connect the camera to a computer and use it as a PC camera. Before using your camera as a PC camera, please install Windows XP SP2.
The PC camera functions can be used with Windows Messenger 5.0 or later version, or MSN Messenger 7.0 or later version.

Before connecting your camera to a computer

Please perform the following upgrades before connecting the camera to a computer.

- Upgrade Windows XP to SP2.
  Install Windows XP SP2.
- Install Windows Messenger 5.0 or later version.
  Download Windows Messenger 5.0 or later version, and install it.
- If using MSN Messenger, please install MSN Messenger 7.0 or later version.

CAUTION

- The PC camera function can be used only with computers in which Windows XP was preinstalled. Correct operation cannot be guaranteed for models that have been upgraded to Windows XP.
- The zoom cannot be used with the PC camera function. Moreover, only images can be recorded; audio data cannot be recorded.
- Although your camera can shoot at a maximum rate of 15 frames per second, the rate at which you can broadcast in the PC camera mode may be less than this depending on the speed of your Internet connection.

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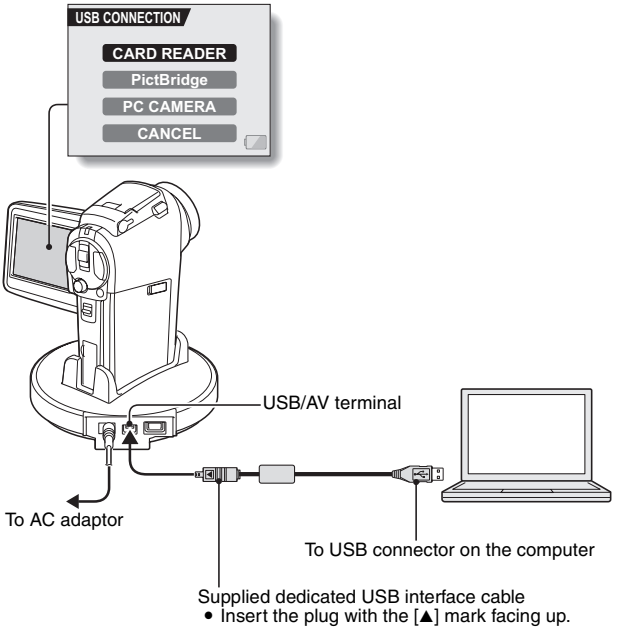
Connect your camera to a computer

❶ **Start your computer, and use the supplied USB interface cable to connect the docking station to the computer.**
- Connect the docking station's USB/AV terminal to the computer's USB connector.

❷ **Press the ON/OFF button to turn the camera on, and set the camera in the docking station.**
- The USB Connection Screen appears on the camera's monitor.



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❸ **Select “PC CAMERA”, and press the SET button.**

CAUTION

Insert and pull out the cable carefully

- When connecting the cables, make sure that the cable plugs are correctly oriented and that they match the shapes of the terminal sockets on the devices. Push the plugs in straight when connecting them. If undue force is used to connect a cable, it may permanently damage the connector pins in the terminal socket.
- Do not use excessive force when connecting and disconnecting cables.

HINT

If the [USB Video Device] icon does not appear in the [My Computer] window...

- The device driver installation may not have been successful. Open the [Printer and Other Hardware] folder in [Control Panel], delete [USB Video Device] from [Scanners and Cameras], and reinstall the device driver.

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ABOUT MovieFactory

MovieFactory is an integrated tool for processing and storing video, music, photo and data files to disc with your computer.
The limited edition contained in the SANYO Software Pack comprises DVD authoring functions only.
For information concerning how to use MovieFactory, click on [Program] → [Ulead DVD MovieFactory 5] → [User Manual], and select [DVD MovieFactory User Guide] to access the user's manual.

Main features

- **Create your own movie discs**
  Create your own movies in DVD or Video CD format. Download image data from a DV camera, digital movie camera, digital camera, video tapes and TV programs, for example, add effects, and then save the edited data on a disc.
- **Edit HD mode video clips**
  Now you can edit video clips that were recorded in the HD mode without converting the video files from the HD MPEG4 format.
- **Make slideshows**
  Create a slideshow of the still images etc. captured with your digital camera, and store them to DVD or CD. Ideal for sorting and managing your photos.
- **Capture directly to disc**
  Burn DVD discs directly from your DV camera, video tapes, TV programs, etc., while you view them in realtime.
- **Disc copy**
  It's easy to make disc-to-disc copies. Works for any kind of disc–DVDs, music CDs, MP3 files, your homemade discs, data discs.

CAUTION

- Note that MovieFactory cannot be used to successfully record to DVD from media which incorporate copy-protect or scrambling technologies to protect copyrights.

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Additional features

- File format conversion
  Use MovieFactory to convert the file format and image quality, then save it.
- Burn from disc images
  When burning a DVD video, save an image file of the same contents on your computer's hard drive. Use this file to burn the data to disc.
- Labels for your discs
  Print your own labels for your CDs and DVDs. (Blank labels for printing are available commercially.)

■ **For questions about MovieFactory**
Further information about MovieFactory can be found at
http://www.ulead.com/

<Where to find the serial number>

- From the MovieFactory environment icons , select "About Ulead DVD MovieFactory". The program version as well as the serial number are shown.

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ABOUT Motion Director

Use Motion Director to remove motion blur from video clips captured with your camera and to make a single panorama still shot from a video clip recorded while panning.
An outline of Motion Director is introduced below. For details, please refer to online help for Motion Director.

Importing

Motion Director can read either of these file formats:

- MOV
- MP4

The compression coding for each is as follows:

Format	Video coding	Audio coding
MOV	Motion JPEG	WAVE
MP4	ISO MPEG-4	AAC

The frame size is VGA (640 × 480 pixels) or less.

Output format and playback

Motion Director can write files in the following formats:

Motion-blur correction: MPEG-4, MOV
Panorama composite: JPEG, BMP, TIFF, QuickTime VR

VR spatiotemporal images saved in the QuickTime VR format using Apple's QuickTime Player can be viewed.

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